SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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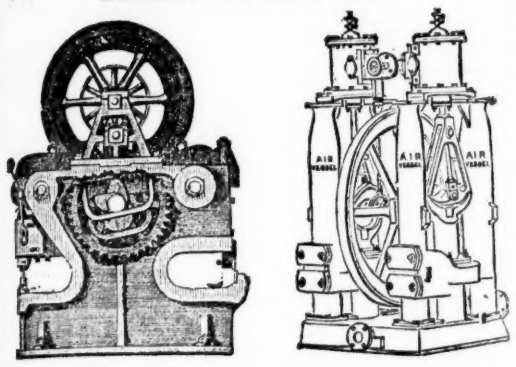

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PARIS, BRONZE MEDAL, 1867.

ORDER OF THE CROWN OF PRUSSIA.

FALMOUTH, SILVER MEDAL, 1867

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the Geographical Congress, Paris, 1875—M. Favre, Contractor, having exhibited the McKean Drill alone as the MODEL BORING MACHINE for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

THE McKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecutive weeks, ending February 7, was 24·90, 27·60, 24·80, 26·10, 28·30, 27·10, 28·40, 28·70 metres. Total advance of south heading during January was **121·30 metres, or 133 yards.**

In a series of comparative trials made at the St. Gothard Tunnel, the McKean Rock Drill continued to work until the pressure was reduced to one-half atmosphere (7½ lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these Machines for the SEVERN TUNNEL; the LONDON AND NORTH-WESTERN RAILWAY for the FESTINIOG TUNNEL: and the BRITISH GOVERNMENT for several Public Works. A considerable number of Mining Companies are now using them. Shafts and Galleries are driven at from three to six times the speed of hand labour, according to the size and number of machines employed, and with important saving in cost. The ratio of advantage over hand labour is greatest where the rock is hardest.

These Machines possess many advantages, which give them a value unapproached by any other system of Boring Machine.

THE McKEAN ROCK DRILL IS ATTAINING GENERAL USE THROUGHOUT THE WORLD FOR MINING, TUNNELLING, QUARRYING, AND SUB-MARINE BORING.

The McKEAN ROCK DRILLS are the most powerful—the most portable—the most durable—the most compact—of the best mechanical device. They contain the fewest parts—have no weak parts—act without SHOCK upon any of the operating parts—work with a lower pressure than any other Rock Drill—may be worked at a higher pressure than any other—may be run with safety to FIFTEEN HUNDRED STROKES PER MINUTE—do not require a mechanic to work them—are the smallest, shortest, and lightest of all machines—will give the longest feed without change of tool—work with long or short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or open work. Their working parts are best protected against grit and accidents. The various methods of mounting them are the most efficient.

N.B.—Correspondents should state particulars as to character of work in hand in writing us for information, on receipt of which a special definite answer, with reference to our full illustrated catalogue, will be sent.

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Has only two moving parts—thus ensuring freedom from derangement, and is absolutely self-feeding.

Is excessively light, and can be carried by one man, who can with the No. 1 size (weighing only 35 lbs.) drill 40 holes ⅞ in. diameter and 1½ in. deep per minute, in the hardest Aberdeen granite for splitting purposes.

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AND

AIR COMPRESSORS,

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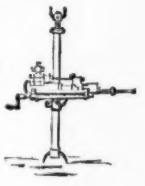

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(LIMITED).

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1.—THEY ARE CHEAPER THAN ANY OTHER KIND IN FIRST OUTLAY.

2.—ONLY ABOUT ONE-FOURTH OF THE SPACE USUALLY OCCUPIED BY DRESSING-FLOORS IS REQUIRED.

3.—FROM 60 TO 70 PER CENT. OF THE LABOUR IN DRESSING, AND FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.

4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN FOR MARKET AT ONE OPERATION.

They have been supplied to some of the principal mines in the United Kingdom and abroad—viz.,

The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines Darlington, Colberry, Nanthead, and Bollyhope; the Stonecroft and Greyside Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the Duke of Buccleuch's); Bewick Partners, Haydon Bridge; the Old Darren, Esgairmwyn, and Ystumtuen Mines, in Cardiganshire; Mr. Beaumont's W.B. Mines, Darlington; also Mr. Sewell, for Argentiferous Copper Mines, Peru; the Bratsberg Copper Mines, Norway, and Mines in Italy, Germany, United States of America, and Australia, from all of whom certificates of the complete efficiency of the system can be had.

WASTE HEAPS, consisting of refuse chats and skimpings of a former washing, containing a mixture of lead, blende, and sulphur, DRESSED TO A PROFIT.

Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly profit on our Nanthead waste heaps amounted last year to £600, besides the machinery being occupied for some months in dressing ore-stuff from the mines. Of course, if it had been wholly engaged in dressing wastes our returns would have been greater; but it is giving us every satisfaction, and bringing the waste heaps into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines, Wanlockhead, Abington, N.B., writing on 20th March, 1876, says—"I have much pleasure in stating that a full and superior set of your Ore Dressing Machinery has been at work at these mines for fully a month, and each day as the moving parts become smoother, and those in charge understand the working of the machinery better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply, and satisfactorily than by any other method."

Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines, says—"Your machinery saves fully one-half on old wages, and vastly more on the wages we have now to pay. Over and above the saving in cost is the saving in ore, which is n t much short of 10 per cent."

GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The separation which they make is complete."

Mr. MONTAGUE BEALE says—"It will separate ore, however close the mechanical mixture, in such a way as no other machines can do."

Mr. C. DODSWORTH says—"It is the very best for the purpose and will do for any kind of metallic ores—the very thing so long needed for dressing-floors."

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SELF-GOVERNING PUMPING ENGINE,

FOR ECONOMICAL USE OF STEAM.

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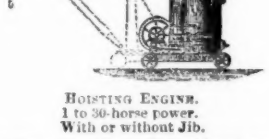

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With or without Jib.

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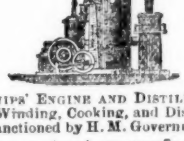
For Steep Inclines and Quick Curves.



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For Winding, Cooking, and Distilling.
Sanctioned by H. M. Government.

WINDING AND PUMPING ENGINE.
6 to 20-horse power.

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We claim 40 per cent. greater effective drilling power, and offer to compete with any machine of its class.

See following extracts from the reports of Judges in awarding Medals:—

"2. Its simple construction ensures durability, &c.

"4.—The steam or air cushions at each end of cylinder effectually protect from injury

"5. Its having an automatic feed, giving it a steady motion, &c.

"6. Its greater steadiness and absence of jar and vibration experienced in other drills, which is very destructive to their working parts, &c.

"7. Its greater power is some FORTY PER CENT. in favour of the Ingersoll."

Medals awarded for several years in succession "For the reason that we adjudge it so important in its use and complete in its construction as to supplant every article previously used for accomplishing the same purpose."

Estimates given for Air Compressors and all kinds of Mining Machinery. Send for Illustrated Catalogues, Price Lists, Testimonials, &c., as above.

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from the very best quality of charcoal iron and steel wire.

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SHIPS' RIGGING, SIGNAL AND FENCING STRAND, LIGHTNING CONDUCTORS, STEAM PLOUGH ROPES (made from Webster and Horsfall's patent steel wire), HEMP, FLAX, ENGINE YARN, COTTON WASTE, TARPAULING, OIL SHEETS, BRATTICE CLOTHS, &c.

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THE "CHAMPION" ROCK BORER

STANDS UNRIVALLED

For Tunnels, Mines, Quarries, Harbour Works, Cutting Blocks of Granite, &c.

The working parts are made of the toughest steel and phosphor-bronze—steel castings are also used—so as to combine strength with light weight.

AIR-COMPRESSING MACHINERY

Of the simplest and best construction.

Combined Water-pressure Engines and Air-compressors,

Giving most excellent results.

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STONE BREAKER,

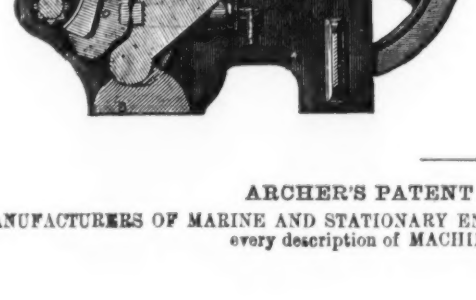
For Road Metal, &c.

Machines with combined Vertical Jaw and

CUBING ROLLER.

Guaranteed to break more cubical and to make less small than any other Machine.

Simple Machines, with plain Vertical Jaws, without Roller.



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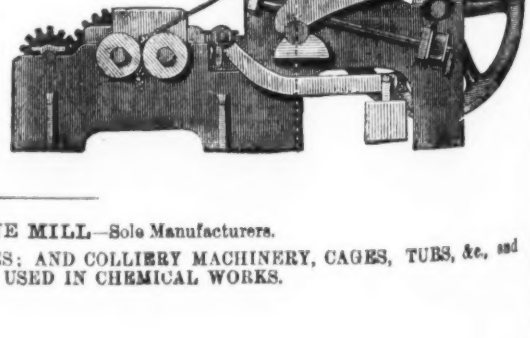
Apply for prices and particulars to the Manufacturers, as above.



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MANUFACTURERS OF MARINE AND STATIONARY ENGINES; AND COLLIERY MACHINERY, CAGES, TUBS, &c., and every description of MACHINERY USED IN CHEMICAL WORKS.

Original Correspondence.

ROCK-BORING MACHINERY—No. I.

The application of machinery to the boring of holes for blasting purposes is a subject of considerable importance to the mine adventurer as well as to the miner. By means of boring machines shafts may be sunk, levels driven, and lodes explored in one-third of the time required to effect the work by manual labour alone, while dead charges, such as water cost, management, and maintenance of works, may be proportionally lessened, and the chance of realising satisfactory results for the capitalists materially increased.

For many years rock-boring plant was of an unreliable character. Air-compressors were faulty in material and construction, the pipes frequently of insufficient diameter and badly jointed together, and the boring machines ill contrived and of uncertain duration, while the carriages, stands, and stretcher bars were often so light and ricketty as to lessen and even to neutralise the useful effect of the machines. These various defects have now to a great extent been remedied. Practice and care have established the success of this class of machinery, and but little remains to be accomplished other than to apply it on a scale commensurate with the work to be done. In fact, it may be safely asserted that rock-boring machinery is as essential to the rapid and economical development of a mine as the pumping-engine itself.

For the purpose of driving percussive boring machines at the bottom of shafts or in subterranean headings pneumatic power is desirable. Such power can be transmitted to a great distance without difficulty, and will in its use not only supply air to workmen, but materially aid in expelling the gases resulting from firing explosive compounds.

Mechanical boring to afford satisfactory results involves a well devised system of working, in which time, the unit of cost and expression of the result, may be employed to the fullest and most beneficial extent. If a high rate of progress be required two or more boring machines must run together, and the machines, whatever their number, mounted in such a way as to be readily shifted to any part of the face. Then, when the boring is complete, the tackle must admit of its being quickly withdrawn, the shot holes readily charged and blasted, and the debris rapidly removed.

The apparatus for driving rock-boring machines consists of—

(a) Compressing engines and air compressors.
(b) Air receivers.
(c) Pipes for the conveyance of compressed air.
(d) Railways for carrying the boring tackle.
(e) Carriages or stands for mounting the boring machines.
(f) Rock-boring machines.

While a "cut" or advance includes—

(g) Boring the holes.
(h) Charging the holes.
(i) Blasting the holes.
(k) Removing the stuff after the blasting operation.

(a) Compressing Engines and Air Compressors.

If boiler power is to furnish boring power through the medium of compressed air, a considerable deduction must be made from the former. Specifically stated loss is incurred—

1.—In converting boiler into engine power.

2.—In converting engine into pneumatic power.

3.—In passing pneumatic power (compressed air) through the transmission pipes.

4.—In overcoming friction and changing the movements of the boring machines.

At the Blanzy Collieries, Montceau-les-Mines, France, considerable attention has been given to the subject of compressing air with the view of ascertaining the loss of power between the boiler and the boring machines. At that place two kinds of compressors are employed—one a Sommeiller, in which the speed is slow, the valves large, the air compressed in contact with water which fills the clearance spaces, and delivers the contents of the stroke into the receiver; the other a Blanzy compressor, in which the piston speed is comparatively high, and water is pumped into the cylinder during the compression of the air. M. Gralliot, the mechanical engineer to the establishment, selected the former compressor for trial, and after a series of exhaustive experiments ascertained in general terms—That the work charged into the receiver in the form of compressed air represents from 35 to 45 per cent. of the work due to the steam within the boiler, while the work obtained through the medium of boring machines is only 20 to 25 per cent of the boiler work. It, therefore, follows that from *four* to *five* horse-power is required to afford *one effective* horse-power in the boring machines, and that the loss in transmitting compressed air from the receiver to the machines, and in changing the movement of the piston and its accessories is from 15 to 20 per cent. of the power generated within the boiler. In other words, the *power* within the boiler is disposed of as follows:—

Loss in transmission from boiler to engine, and overcoming resistances in engine and compressor	0·65 ... 0·55
Loss in passing from receiver through transmission pipes, and in changing the movement of the piston and its accessories	0·15 ... 0·20
Effective power obtained in boring machines	0·20 ... 0·25
Total	1·00 ... 1·00

The table confirming these general results, compiled by M. Gralliot, is subjoined, the figures being mostly according to the French metric system:—

Pressure per square inch ... Lbs.	62½ ...	35¼ ...	63¼
Revolutions of engine per minute	10-11 ...	10-11 ...	13-15
Water injected into compressing cylinder ... Litre	·560 ...	·560 ...	·560
Temperature of water injected	Morn. 71° F.	Even. 89° F	
Work due to the steam used in steam engines ... Kilogs.	4361·60 ...	3234·80 ...	4460·00
Work absorbed by compressors ... ,,	3820·88 ...	2575·44 ...	4029·00
Work absorbed by the friction of the machinery ... ,,	740·72 ...	659·36 ...	431·00
Co-efficient of the useful effect of the steam ... ,,	·83...	·80...	·90
Work absorbed by compressor, divided as follows—			
Work absorbed in compression of air ... ,,	1571·48 ...	963·40 ...	1655·64
Ditto in expelling air ... ,,	422·60 ...	271·76 ...	788·40
Ditto in expelling water ... ,,	25·48 ...	13·75 ...	25·4 ·
Ditto stored in receiver ... ,,	1601·37 ...	1328·53 ...	1560·11
Work lost by the heating of the air ... ,,	39·76 ...	210·24 ...	797·60
Volume of air drawn in by stroke of piston ... Cub. metre	044·530 ...	046·250 ...	054·000
Ditto compressed at the ordinary temperature ,,	035·230 ...	054·400 ...	035·300
Gross work produced by the steam ... Horses	46·50 ...	34·50 ...	47·60
Effective work transmitted by the engines ... ,,	36·75 ...	27·50 ...	43·00
Ditto stored in receiver ... ,,	17·10 ...	14·15 ...	16·17
Work transmitted to the levels, admitting that the borers only return 60 per cent. of the useful work ,,	10·25 ...	8·50 ...	10·00
Proportion of available work of air to gross work of steam	0·36 ...	0·41 ...	0·35
Ditto ditto ditto to actual work of steam	0·44 ...	0·51 ...	0·38
Proportion of actual work of air in machines to gross work of steam	0·22 ...	0·24 ...	0·20
Proportion of actual work of air in machines to effective work of the engine	0·26 ...	0·32 ...	0·23

JOHN DARLINGTON.

THE GEACH BORING MACHINE.

SIR,—The high rate of speed obtained in the Port Shewett Tunnel is due to the following circumstances:—

1.—The Pennant rock is an aggregation of small grains of quartz very slightly cemented together, consequently light quick blows suffice to break up the cementing clay, and to release the grains. Any ordinary rock-boring machine would, therefore, bore holes very quickly in the Pennant rock.

2.—To the fact that two powerful borers are worked together with a heavy pressure of air—viz., 60 to 70 lbs. per square inch; and

3.—To the perfect organization of the three operations of boring, blasting, and removing the stuff, without which the best and most efficient boring machine must appear to fail.

Your Cornish correspondent, and others, continually draw fallacious comparisons between one boring machine and another.

If the work is quickly done, the machines get the exclusive merit of it; if tardily, they are condemned. In the main, a smart direct organization of the work, when a minute is not practically lost in 24 hours, with machines that will work in stone easily disintegrated, means a high rate of speed; whereas if the work is beset with numerous hindrances entailing a loss of 12 out of 24 hours, and no regular order observed in the conduct of the work, the speed must be comparatively low, and the best machine, of itself, cannot modify this result. In Mr. Geach's paper, read before the Society of Engineers, he gives many interesting details, but from the printed reports I do not find it stated that two fitters are employed to repair the machines, so as to maintain two on the boring carriage, neither is the cost of the work stated.

We must be thankful for the information vouchsafed to us; but a full and impartial paper would have included this and every other particular. Even some of our best mining engineers preach *ex cathedra* from partial and specious statements, whilst many of our mine agents will adopt results without troubling themselves to ascertain the exact conditions under which they have been obtained.

ALPHA.

AIR-COMPRESSING ENGINES.

SIR,—It appears to be now beyond question that an enormous economy of time can be effected by the substitution of rock drills for hand labour in many parts of a mine, more especially in sinking shafts and driving long levels, but it seems to me that the adoption of rock drills cannot become general until we have cheap and efficient air-compressing machinery. Until we have a 50*l.* air-compressor, so that we can use three or four in a large mine (underground, and not far from the rock drils) the drills themselves will be but sparingly used. As Mr. John Alexander, of Gartsherrie, proposes to make air-compressing machines more effective and satisfactory than heretofore by arrangements rendering the action of the valves in connection with the compressing cylinder rapid and certain, I should like to know at what price he could produce a machine that would rapidly compress to (say) five or six atmospheres with the aid of a small engine and boiler that could be used in a chamber (say) 8 ft. cube underground. He refers to an invention of 1875 which I do not remember, but this shows me that he has given attention to the sublect, and he states the improvements are also applicable to valves sliding on flat port faces, or on port faces which are more or less curved. In one modification either a single valve is used for both ends of the cylinder, or there are separate valves for each end, but attached to one rod, and the rod which passes out through a stuffing box in the usual way is acted on by a projection or lug on the slide block of the piston-rod, or in any equivalent manner. The slide block does not act directly on the valve rod, but on approaching each end of its stroke it compresses a spring which bears on a collar on the valve rod; the valve rod is held by a catch whilst the spring is being compressed, and until the slide block almost reaches the end of its stroke, but then the slide block acts on a trigger which releases the catch, and the spring acts on the rod and effects the complete shift of the valve or valves in a sudden manner. The parts are repeated, so that similar actions take place at both ends of the stroke. In this modification self-acting or clack valves are required in the passages by which the compressed air is led away from the cylinder.

In a second modification the valves for the two ends of the cylinder are separate. A spring and trigger arrangement like that of the first modification is used for shifting the valves at the end of the stroke, but an additional spring is applied between collars or discs on the rods of the separate valves, together with an additional catch and trigger, which prevents one of the valves from making its complete shift at once. On the compressing piston reaching one end of the cylinder the valve at that end which has been open for the discharge is suddenly moved through its entire traverse, so as to put that end of the cylinder in communication with the inlet, but the valve at the other end is moved only so far as to close that end from the inlet without opening it to the discharge. In consequence of this the compressed air in the discharge passage cannot re-expand into the cylinder and thereby occasion loss of power. Then, when the piston has moved so far as to have compressed the air in the cylinder to about the pressure of the air in the discharge passage, a projection suitably adjusted on the slide block acts on the additional trigger and causes the additional spring to complete the traverse of the valve and open the port to the discharge. In this modification a self-acting or clack-valve may not be required in the discharge passage.

Now, I should think some further modification of this invention would adapt it to the purposes I have mentioned, and give us a cheap underground compressor, the advantage of having the machinery underground being that the cost of fixing and maintaining a pipe suitable for carrying off the products of combustion would be very small as compared with similar charges with a pipe for conveying compressed air, especially as the former would have to be conveyed merely to the bottom of a suitable shaft, while the latter would have to extend from surface to the working place. There is a great future for both air-compressors and rock drills, and I am sure that whatever can be done to extend their use will be of equal advantage to mining and to working miners. S. R.

Camborne, Aug. 1.

PERPETUAL MOTION ENGINE.

SIR,—Although volumes have been written pointing out the absurdity of attempting to obtain perpetual motion, and although most of those who devoted themselves to the attempt have reduced themselves to poverty unless they have been provided with funds by others, in which case the loss is of course transferred from the inventor (?) to the capitalist, there are still to be found men as confident as ever of success who make designs, and capitalists as short-sighted as ever to provide funds. Among the recently issued patents is one to protect another effort in this direction, and it is really to be regretted that any Government should accept fees and issue protection for a contrivance which is so palpably absurd as a perpetual motion machine. The invention just patented by Mr. Boutet, of Paris, whose name is well known to the readers of the *Mining Journal* as the projector of the Channel bridge and railway, was exhibited by him in Great Winchester-street, except as to some unimportant modifications, about 15 or 20 years ago, and at least twenty almost identical contrivances are described in Dircks's "Perpetuum Mobile" and works of a similar character. His present specifications, instead of merely describing the machine, goes into a long dissertation as to why the machine ought to produce the effect he hopes it will, but it is scarcely necessary to say that his arguments are altogether untenable, and that the inventor has unquestionably misunderstood the application of the principles of Archimedes and of Pascal, as well as the law of Boyle and Mariotte, so that although it is perfectly true that the principles and laws to which he refers are well known and recognised by scientists of all nations, the complete comprehension of them would at once have convinced Mr. Boutet that his aero-hydrostatic motive-power engine could not by any possibility produce motion of any kind, much less produce power as he anticipates. This was pointed out to Mr. Boutet by the writer both in Great Winchester-street and at Wandsworth, so that it is the more regrettable that he should have sacrificed his funds to patent so long exploded an idea.

The modification which Mr. Boutet has introduced, as compared with his former suggestion, is that he proposes to force the air-filled balloons under the water, and to let the air escape when the balloon is brought to the lowest point by the rotation of the octagonal wheel, which carries the series of eight balloons. The escaping air, will, he hopes, be forced by the pressure of the water into the balloon at the upper part of the wheel, and which is not submerged; and in entering the submerged balloon, lift the plate which is connected with a crank, and is intended to, but will most certainly not, give motion to the machine, is to rotate the balloon-wheel, and drive the inflated balloons successively under water. Mr. Boutet's arithmetical calculations appear to be accurate, for no one will dispute that $264 \times 5 = 1320$, nor that $(4 \times 3{\cdot}14 \times 0{\cdot}4) \div 3 = {\cdot}268$ in round numbers; but his application of facts is entirely erroneous, and gives evidence that, in his mind, the principle of Archimedes and Mariotte's law are in such an unhappy state of confusion that he is unable to extricate them sufficiently to prevent deceiving himself. It is unnecessary to give the details of his calculation, since they are identical in effect with those always put forward by perpetual motionists. Each individual statement and calculation is correct, but the results are combined where they have no connection with each other, and separated where they should be combined, and he finally arrives at these comic conclusions. He says—I will now demonstrate (but he does not do so, nor is it necessary that he should) that a balloon of 80 centimetres in diameter, immersed to a depth of 5 metres, undergoes a pressure of 10·05 kilogrammes, under which the total volume of the mass of air contained in the tube and in the balloon is reduced one-third; suppose the water, he continues, be suddenly removed, it is evident that, by virtue of its absolute elasticity, the mass of air will reassume its original volume with a force equal to the pressure to which it has been subjected; but as the pressure does not cease to act, it seems certain, he thinks, that at the moment the communication is opened between the two balloons it will have for components (1) the elastic force of the air beyond the effort exerted for immersing the balloon (this is the seat of the fallacy, as will presently be explained) when the volume of air will diminish proportionally as it is forced lower; and (2) the entire pressure of the water which does not cease to act, added to the elasticity, and of which he has given the calculation. From this he thinks, though in truth it does not at all follow, that the working power will at least be augmented by one-third, which will, he calculates, give for the apparatus above described a force of 33-horse power; and following these results, he supposes that a new motive-power engine of unlimited power and universal application may be constructed.

Now, the error into which Mr. Boutet has fallen is similar to that made by other perpetual motionists, and it is the inability to detect that error that causes capitalists to be foolish enough to waste their money on similar schemes. Though most of his statements taken separately are not untrue, he does not properly utilise his facts, or he would see that even upon his own showing the production of motion, much less of force, is impossible. We will call the unsubmerged ballon A, and the others B, C, D, E, F, G, H, as they stand in succession upon the octogon wheel, AE, BF, CG, DH are to be connected in pairs by pipes, each pipe being shut except whilst it is in a vertical position, so that if AE be in communication with each other the communication between BF, CG, DH, each to each is closed. Now, suppose AE to be open to each other, the slightly compressed air would have a tendency, being acted upon by the pressure of the 5 metres of water, to rush from E upwards into A. But Mr. Boutet does not seem to be able to comprehend that he expects the rise through 5 metres of this one balloonful of air to submerge three balloonfuls to the same depth, and in addition thereto, to put the machine in motion and develope 33-horse power. It has often been suggested that perpetual motionists could be cured by sitting them in a chair and leaving them there until without cords or pulleys they lifted themselves into mid-air; but Mr. Boutet seeks to do more than this, he would not only lift himself in his chair, but lift his wife and family, and all his servants in addition.—*Aug.* 1. H.

INVESTMENT—LEAD MINING AT HOME AND ABROAD.

SIR,—To make the most of investment there must be no sloth, no inertness, but, on the contrary, earnest and practical discrimination, and it is essentially needed that this discernment be exercised at starting, as at best it is often too late to admit of a successful retreat when an unfavourable selection of securities, or supposed securities, be adopted. The investor should inform himself, and act, from time to time without that *dolce far niente* which lolls supinely upon money bestowed by fortune. Apart from personal gain, there is a responsibility in the possession of money which should be recognised by the favoured minority, for there is something in the condition of humanity in which self-preservation and self-gain are essential elements, and if we lay our money out most advantageously for ourselves we are also, in pursuance of a natural law, doing that which is most advantageous for our fellow-creatures. Pray, let us ask of those who advocate foreign loans and foreign investments what gain can England ever acquire from the money lent to Russia and to Turkey—to say naught of fifty other countries and States which have become not only bankrupt, but open repudiators. It is all very well to foster up the credit, provide the funds, and to develope the resources of our colonies, for they absorb and support our surplus population, and at the same time extend the sway and add to the power, resources, and wealth of the Mother Country and the majesty of our Queen. We have employment for our money at home, and whatever surplus money may accrue can be profitably used in Australia, New Zealand, Canada, the Cape, British Columbia, Ceylon, India, and Natal. We have at home our railways, our mines, rich, and languishing from lack of capital, our manufactories, mills, numerous mechanical and constructive enterprises, building and corporate, and co-operative societies, canals, docks, joint-stock banks, discount, and financial institutions, gas, insurance, and thousands of other profitable enterprises and undertakings in which capital can be embarked, the working masses employed, the manufacture, trade, and commerce of the country fostered, strengthened and augmented, while, in cases of exceptional losses and disaster, the money merely changes hands, it circulates at home the nation loses no part of it, while the community is the richer by whatever modicum of product results from its use. Hence, why should we lend our money to Spain, Venezuela, Peru, Mexico, Costa Rica, Greece, Paraquay, or Uruguay? Far better to foster and promote the mining interests of our own in Wales, Scotland, the North of England, and the Midland Counties. But space on this occasion compels us to refer simply to a few of our head mines, and among the choicest of these are the Van, Great Laxey, Minera, Leadhills, Roman Gravels, Tankerville, Snailbeach, West Chiverton, and Foxdale, with the Dyliffe, Ladywell, Cambrian, East Chiverton, East Craven Moor, West Craven Moor, Pateley Bridge, and Talybont.

There is also recently introduced the Hultafall lead and blende mines in Sweden; this property has been most favourably reported on by Capt. Richard Southey, the successful regenerator of West Chiverton, and the manager of East Chiverton, one of the most promising progressive mines in Cornwall, standing east of West Chiverton and south of the Old Shepherd and East Rose mines, the sett is traversed by the same lode as proved so productive at West Chiverton, and likewise the north and south lodes of Old Shepherd. Hence the magnetic and electric currents are precisely similar, while the rock formation is identical and equally crystallised, with the appearance of lead at the same depth as it was discovered at East Wheal Rose—60 fms. below the surface. This latter mine yielded 60*l.* dividends two-monthly on each 5*l.* share, with occasional bonuses. Mr. Granville Sharp is the secretary of West Chiverton, East Chiverton, East and West Craven Moor, and it seems probable that the whole four will at no remote date prove substantial and permanent prizes. The Hultafall lead and blende mines were introduced by Mr. George Batters, who likewise was the promoter of the Van, now paying dividends of 50,000*l.* annually. Capt. Southey winds up his report of the Hultafall by stating that:—"I will now calculate the proceeds from one crusher only, and will put it down to its very lowest—(say) crush 40 tons per day, which in round numbers, after allowing for all contingencies, will be about 1000 tons per month, and taking this as worth (say) 5*l.* per ton, is 5000*l.* Deduct cost—pumping, raising, dressing, dues, freight, &c., 1200*l.* leaving a net profit of 3800*l.* a month."

This mine, introduced so soon after the floating of Leadhills, imparts to the market a degree of confidence, for earnest reflection and discrimination have evidently been exercised by the promoters of both these companies. They alike impart credit to the promoters and their agents—Captains Waters and Southey.

Apart from these unquestionable prizes, there are many lead and blende properties in Cornwall that ought to be worked—as, for instance, Pencorse, standing to the east, and in the next valley to East Rose. There are many thousands of tons of blende laid open and standing in the backs of the several levels, worthless when the mine was last worked by a Leeds company, but now saleable at 3*l.*, 3*l.* 10*s.*, and 4*l.* a ton, while the operations are carried down to just the depth at which East Wheal Rose was productive for lead. This latter mine was still rich and profitable when the works were inundated through the bursting of a water-spout directly over the shafts, filling up the valley, and drowning some 70 to 80 miners at work at the time. Reports and plans of both these mines are at the disposal of capitalists who can command some 10,000*l.* to purchase machinery and unwater the old explorings, on application to the undersigned, for it is greatly to be regretted that a mine of such recognised promise

should remain idle when Englishmen have nothing better to do with their money than to lend it to the Turks and Russians to cut each other's throats and mutilate and slaughter old men, women, and infants under the banners of the Cross and the Crescent, disguising their ruffianism and atrocities under the cloak of religion —to say naught of the destruction of property, and the cruel collapse to the social and commercial progress of the civilised world.

R. TREDINNICK,
Dealer in Stocks and Shares.

Exchange, 66, Coleman-street, London, E.C., July 31.

CAPITAL AND LABOUR—HOME INDUSTRIES AND MINING.

SIR,—The labour war—strikes and lock outs—which is now disorganising industry in several of the business "centres" of the kingdom has evidently its roots deep down among the masses of the people; and some, at least, of the results of the pinching and squeezing are lack of employment and growing poverty among the working classes, intensified by numerous failures amongst the shopkeepers and the smaller traders. It may be added further that the most bitter commentary on the sad results of the contentions between capital and labour is the knowledge on the part of the latter that the ruling depression in the trade, commerce, and enterprise of the country is solely attributable to the obstinancy and conduct of workmen. To our mind, therefore, the immediate future bears no very favourable interpretation, because ultimately it is the employment of the people and the prosperity of the small traders and shopkeepers that must determine the period of "decadence" or the healthy progress and expansion of the trade, manufacture, industry, and commerce of the nation. We have had years of marvellous productions and of good prices for the products of the earth both at surface and underground, yet the material progress of the community (if not actually collapsed) is practically retrograding instead of advancing. Money is most abundant and cheap; capital steadily increasing in centres where its presence depresses rather than encourages. The political aspect is not less distressing than the condition of the labour markets at home, in America, Canada, France, Germany, and Belgium. Still in the face of all these drawbacks the credit of this country was never higher or better, or apparently more firmly established, or more ably administered than by our present Government. We ought, therefore, to expect prosperity in the home industries of the community, and in no other branch so early and substantial a revival as in mining, for at no former period in its history could shares be so favourably purchased to remunerate investors as at present. There are unquestionably great and sterling discoveries of mineral wealth made at several mines, still the prices of shares not only rule low but stand actually neglected. This stagnation is the more remarkable as the payment of large and remunerative dividends is certain in numerous cases, while in others the prospective prospects are of the most satisfactory character, and capable of rapid development and expansion. As examples, we may enumerate Leadhills, Pateley Bridge, Van, Cambrian, Grogwinion, Tankerville, Ladywell, Great Laxey, West Chiverton, Devon Great Consols, Dyliffe, Agar, and West Pateley Bridge. There is a time to buy as well as a time to sell, and the action of a true investor is to purchase in the cheapest and to sell in the dearest markets. Hence there can be no question of the present being a favourable epoch for embarking capital into sound and expansive British mines.

R. TREDINNICK,
Dealer in Stocks and Shares.

Exchange, 66, Coleman-street, London, E.C., July 31.

INVESTMENTS IN PROGRESSIVE MINES

SIR,—As an experienced and long practised observer of the usual procedure of mining companies, and the mutual conduct of shareholders, and agents, or directors, I beg to make some remarks upon the recent lawsuit at the Cornwall Assizes, in the Nisi Prius Court, before Lord Chief Justice Coleridge. The suitor was one Dr. Lund, and the defendant the well-known mining share dealer of the City, Mr. John Reynolds, Ethelburga House, Bishopsgate-street Within. The ground of enquiry was whether the representations made by the defendant in reference to a mine called the Trevarrack, situated in a rich tin mining district in Cornwall, were true, as plaintiff contended they were made to induce him to take part in the adventure. The judge ruled that there was no case to go to a jury, as no misrepresentations were made by Mr. Reynolds, and the plaintiff bought, with his eyes open, upon the real facts of the case. The judge assumed that the Doctor was the victim of his own simplicity, and he applied in his case "the old saw" that some one said to a judge a man of 40 was either a physician or a fool, and received the laconic and incisive reply "can he not possibly be both?" It is reasonable to assume that this applied to the folly of bringing the action, as in regard to the shares it was not applicable, for the plaintiff was evidently up to all the main points in mining matters, and ready to take advantage by pouncing upon the most substantial man connected with the undertaking, but who was the mainspring of the whole concern.

The point of the matter which claims public attention in the interest of the defendant, whose honour passed through the ordeal of a public investigation unscathed, is this—was there any misrepresentation or over colouring of facts of which the learned doctor could complain? The Trevarrack Mine is situated in a district of Cornwall, geologically rich, and of great mineral reputation, and in the opinion of men of high mining capabilities it was likely to become a very remunerative concern. But it was what is called a prospective mine—a mine not yet paying dividends, but still requiring the application of capital, skill, and industry, with patience to bring out its resources. These were the representations made by Mr. Reynolds, and they were essentially, circumstantially, and even minutely veritable.

There is no class of investors, however, "who make haste to be rich" so characteristically as those who apply capital to mining, and on that account sometimes ruin excellent projects. Their expectations and their hopes, inspired by the well attested, and, indeed, well known facts of enormous fortunes having been frequently made in a short time by mining, especially in Cornwall, they are eager for large dividends before the mine is brought into a condition to pay any dividends at all. Dr. Lund is an unhappy exemplification of the practice that has thus grown up among mining investors of the order we have described.

At present shares in tin mines are held for better prices hereafter, present quotations being so abnormally low. They are mostly held by persons familiar with the great staniferous district, who know the position, and ought to be good judges of the prospect. If the price of tin has lowered the value of dividend-paying mines, how much more must prospective or progressive mines be injured by the same cause? It is difficult to believe that Dr. Lund was not aware of these facts, or could not appreciate them, but he was in a hurry for chickens before there was time sufficient for hatching. As dividends did not come as soon as he wished, he wanted to get back the capital which he fairly risked upon the venture, and unfairly, and, as it proved, illegally and inequitably sought to extract from Mr. Reynolds; but he got instead what he evidently did not expect, a heavy bill of costs in the action. Perhaps the example will teach other investors in progressive mines to wait more patiently for "the good time coming," and not seek to obtain back their capital *per fas et nefas* from any of their fellow-investors upon whom it might be convenient to saddle their own possible loses, or loss of interest, by legitimate waiting for past and present work to bear its fruit.

In truth, this has been one of the most absurd lawsuits of our time, and the most ridiculous, and even ludicrous, mining suits ever recorded. The defence, of course, was not heard, as there was "nothing to go to a jury." Had a defence been heard it would have appeared that all Mr. Reynolds's statements were borne out by the most respectable authorities in Cornwall, and that the mine with the application of adequate capital, and better values in the tin market, would still be an excellent property. Mr. Reynolds would also have had an opportunity of showing that he defended this case in the public interest at the sacrifice of time and money, and which has done very much good to the mining interest in Cornwall in all its aspects, especially to the *bona fide* holders of shares in prospective mines, who have invested their money with the honest purpose of sustaining the undertaking.

A CIVIL ENGINEER.

Kensington, July 31.

MINING SCHOOLS, SCHOOL PUPILS, PROFESSORS, AND OTHER MINING CHARLATANS.

SIR,—As you are ever ready to admit into the columns of the Journal everything which tends to the welfare of mining, and no less so to deprecate that which is spurious and prejudicial to its interest, I beg that, in your next issue, you will kindly concede me space for the following letter, which, perhaps, might not have been an inappropriate continuation of that which I noticed in last week's Supplement, signed "Timothy Collins." The great utility and the wonderful achievements of mining schools and other kindred institutions—such as the Mining Association of Cornwall, making mining philosophers of all the boys in the county—are constantly paraded before the eyes of the public; and lately, more particularly, the extraordinary feats of the Bristol Mining School have been made not a little prominent—complete mine managers, and even doctors in the art of mining, have there matriculated and been turned out. What an absurdity! Is it possible that any man can believe in the utility of such establishments? Mining Schools! Was there ever anything so anomalous, such a misnomer? Can you fancy the mining teacher, in his lecture on mining to his pupils, for their "practical instruction," telling them how to set a pick, to make a swabbing stick, and to clay a hole? Describing a windbore and a bucket-rod, the difference between a shaft and a winze, between a rise and a sink, a pitch and a stope? How to put in a piece of timber or a stull; and of charging them not to "take light from between the staves (rundles) of the ladder," that it is bad luck, and not, on any account, to whistle underground, that it is ditto; describing the difference between a door-piece and an H-piece, and telling them how and where to place the collar launder. Can anything be more purile, more nonsensical than such twaddle? Is such a lecture, such a mode of instruction as this to make a man a miner or to render him competent to take the responsible post of the manager of a mine? In the bowels of the earth—as your last week's correspondent observes—is the only school wherein any mining knowledge can be acquired, and that by long practical exploration and a studious investigation of the various phenomena which present themselves. As well might a man be made a fashionable tailor by serving his apprenticeship with a blacksmith, as he could be made a miner at a school. If mineralogy and assaying be, together with general scholastic lore, imparted to a man who is a practical miner, it will, as a matter of course, make him so much the better and a more useful man in proportion to the amount of instruction which he receives; but to make a miner at a school is impossible. I say assaying—this is not at all unlikely to be useful should a man have to go abroad. No man, however, who is a practical miner can ever attend a school situated at a distance from his home. In the first place, it would prevent his following the occupation at which he earns his bread, and the next is that it would be impossible for him to pay the expenses of his education and his board.

To impart the instruction to which I have above alluded it must be taken to within the reach of the recipient. The rock on which the Truro "Mining School" split was their having opened it at Truro only, where none but the wealthy could attend. No one in the shape of a miner could afford to approach it. They were told by the writer, at a meeting before they opened their school, that on this rock they would "make shipwreck," and so, after trying it on for three years, they did. I was some years ago employed in a mine abroad, at which the chief mining captain was a German—one of the Freiberg pupils—a most gentlemanly man, but just as ignorant of mining as was the laundress who washed his clothes. When underground he was like a fish out of the water, quite out of his element. He was kept there for a few months to attend to the plans, but being quite useless as a miner was soon sent away. I have seen several others in different countries brought up at the mining schools of Germany, France, and England, but all of one and the same category—as miners entirely useless. Professors—this is a class of gentlemen closely allied to that above alluded to—probably as to mining more ignorant and useless still, for they have nothing, not even ostensibility, to recommend them. Why should it be thought that they know aught of mining? Is it because they are called professors of geology? If so, be it known, nevertheless, that they are no miners, possessing no knowledge whatever of metal-creating substances. Mining is a thing entirely beyond their grasp. They know that they do not understand it, and should also know, by the test of conscience, that honestly they should not presume to offer an opinion on it. The writer has been with them in the inspection of mines, when, as a drowning man eagerly catches at a straw, so have they been to catch at any expression of his. Not one of them I assert knows aught of mining, and, therefore, should never be entrusted with mining inspection, nor should their opinion be taken thereon. I have no sooner noticed in the Journal the exaggerated preposterous reports of Prof. Silliman on the Emma, and those of Prof. Price on the Richmond Consolidated, than I have pronounced them to be anything but the truth; any man who understood mining would at once have exclaimed—"It is not so, impossible!" But notwithstanding that all such glowing, flowery reports have hitherto proved to be fallacious, it is not long ago that the Flagstaff people sent out one of the fraternity of professors to inspect and report on the mine, and great importance was attached to the report of Prof. Vincent thereon, but how much in reality, I ask, are the directors and the public the wiser now than they were before the professor saw it? And how much wiser will they be as to the state, prospects, and merits of the mine on the return of the two directors who, I am told, have gone out to see it? Reverting to mining schools, were they merely useless I would not think of troubling you with a letter about them, but being useless is not all; they are infinitely worse than useless; they are highly prejudicial. There are thousands of capitalists in the world, who, being ignorant of the nature of mining, think that a school is a place where it should be taught, and that only at which a knowledge of it is to acquired. Under this erroneous impression they invest their money on the opinion and statement of a school pupil, and entrust him with the management of their property, hence mismanagement, collapse, and not unfrequently ruin.

It appears that a part of the School of Mines' system is that of the pupils being conducted by their teacher into the country and taken underground, in order that they may see how mining is carried on. The scene of this farce of the Truro Mining School was at Wheal Jane Tin Mine. This operation is called "practical mining," and is, I believe, considered to be the most important part of their system of teaching; but will these occasional visits, I ask, by a boy to the interior of a mine make a miner of him? Will it give him any idea as to the price of a pitch—for I confine my views to metallic mining—or of a just price per fathom for the sinking of an engine-shaft—12 ft. square—as hard as an anvil, and with its bottom nearly all under water? Will his visits give him a knowledge of a just and proper price for sinking this shaft, or that of sinking, driving, stoping, or rising in any other part? Nay, he may make his visits until his head is hoary with age, and he will have known just as much of mining on his first visit as on his last. The Freibergian manager—to whom I have before alluded—gave the Cornish miners such a price per fathom that caused them facetiously to say, "We would not exchange places with him;" his salary was 800*l.* a year. On the other hand, being ignorant, he might have given the men such a price as would have starved them. No mining knowledge is obtained at a school. A few weeks ago the following was told me by a gentleman:—"Having had a mine for sale I found a gentleman with whom I entered into a treaty, he having expressed a wish to purchase it. For the inspection of the mine a man was recommended to the intending purchaser by the School of Mines in Jermyn-street. I accompanied him to the mine, but before we reached it we entered an inn, and took a glass of drink, when, after a little while, I said 'Come I think it is time to be about our work—the inspection of the mine,' to which he replied, 'Why you know all about the mine; you can tell me, and I can write my report here.' I thought, well, you are a nice man to be entrusted with such a mission, a mission of such vast importance." I am aware that he, as a pupil of the School of Mines would have known no more as to the value of the mine from seeing it than he would by staying at the inn, and writing his report from the description given him by the owner and seller of the property; this, probably, he knew, but yet as he was supposed to understand his business, and had been entrusted with such a responsible mission it was a breach of confidence to report on a property which he had never seen.

I was told a similar story relative to a Freibergian pupil—rather an old pupil, but he had been one—who, when requested by a fellow inspector, it was in one of the American mines, to "come down and look at the bottom" said "No, I can write up here as well as I can down there." I see, going from one thing to another, that amongst the institutes of Cornwall the managers of the respective mines there have recently established a mining institute at Camborne. This institute is in itself most invaluable, if for no other purpose than that of affording a discussion on the all important question of separating lead from blende, a subject which, during the last 12 months, has caused all the great lights in the county to twinkle. The difficulty about this all-absorbing question seems to be this—the division or separation of the two ores depends on their specific gravity, or rather on the difference of ponderosity between the two different classes of ore, galena, or the sulphuret of lead, being only 46·66 per cent. heavier than blende. The two kinds of ore stand to each other as 250 is to 468·75, so that, to be serious, there should be no difficulty in their separation. As a matter of course, if the one ore be incorporated with the other there will be a difficulty amounting to an impossibility in the separation, but disintegrate or divide the particles, and 46·66 per cent. difference in the weight will cause an easy separation, and set the philosophers at rest. Before I conclude this letter, perhaps you will allow me to remark that distinguished as the gentlemen composing the Camborne Mining Institute may be as miners, they may not be equally so as elocutionists, yet it appears somewhat strange that they could not have chosen their president from among themselves instead of selecting a pupil of the mining school. Surely they are not lost in self-esteem. "Humility leads to honourable deeds."

NATHAN JONES.

NEW CONSOLS.

SIR,—It seems strange that "Looker On," who dates his letter from Calstock, which is in the immediate neighbourhood of the mine, should have been surprised at the turn things have taken. To strangers at a distance relying on the constant glowing reports of the enormous wealth of the mine the collapse would naturally be unexpected and surprising, but to the inhabitants of the district, who were acquainted with the character of the lode, and who were aware of the reckless expenditure and general modus operandi, the wonder has been that the shareholders should have remained so long in the dark. "Looker On" recommends proceedings in Chancery, but it is to be hoped the present difficulties will not be increased by an entry into that slow and ruinous court. The men are in great distress, and they ought honourably to be paid, even if the whole of the machinery has to be sold for the purpose, and should any fresh capital be raised for re-working the mine the promoters will do well to satisfy themselves that the lode as already laid open will ever pay. The only chance of success I consider is to sink deeper in search of discoveries—the lode at the present end is said to be far too hard and coarse to yield profitable returns, and if this should prove the case all the experimental dressing machinery in the world will be of no avail.—*Aug. 1.*

ANOTHER LOOKER ON.

MINING IN NORTH WALES.

SIR,—In looking over the Journal of last week I saw the above heading. I commenced reading, thinking I should have seen some mention of Pant-y-mwyn Mine, they having at this time good courses of ore in every place they are now working, and, being interested in mines in Wales, I was anxious to know how the mines in Flint and Denbighshire are progressing. I was glad to find some of the mines were doing well, but no mention made of Pant-y-mwyn. This will be, without doubt, one of the largest and most profitable mines in the Principality, having a very large area, and seven or eight lodes in the sett, all large and productive, and the one they are now working on is rich in lead ore. When the company have sunk the Modlyn shaft so as to have two levels to work on east and west, and the washing floors laid out so as to command a large quantity of stuff, they will get from 200 to 300 tons of rich lead ore per month. It only requires a little time to develope the mine, and can be worked cheaply, there being in this portion very little water to pump. This mine will in a short time show good returns and large profits. Not being what is termed a market mine, very little is known of the concern, except by those who, like myself, take a tour now and then in Wales, and while there like to visit the mines and places of interest. I cannot understand why the directors do not have the agent's report regularly sent to the Journal for publication. Nothing has appeared since Capts. Harris and Parry reported on the mine some weeks since, and parties who have an interest outside of Liverpool cannot have any information about the mine unless they write the directors. I hope they will see the necessity of giving the public information as to the progress and prospects of the mine.

J.S.

LLECHWED EINION.

SIR,—This mine is situated about four miles from Glendovey Station, with a good road leading from that place on to it, so that the carriage to and from the mine will be light. There has been an adit level taken up from a brook passing through the grant in a north and south direction, and the adit has been extended about 9 fms. east on the course of the lode nearly due east and west, the vein being about 3 ft. wide, showing good spots of copper ore, with small branches of quartz or spar throughout it. The ground rises rapidly going eastward, and 50 fms. of dressing would obtain a cone of from 20 to 25 fms. high, and this could be done for 250*l.*, and at this depth the lode might be expected to be sufficiently deep for good ore deposits. The stratum is a compact clay-slate, and is congenial for finding lead and other mineral deposits. The sett is very extensive, on the property of Sir Pryse Pryse, Bart., granted by tack-note for 12 months, promising a lease for 21 years at 1-16th royalty, and a minimum rent of 20*l.* per year. It is a trial that could be made very cheaply, and for a small outlay might prove of very great value, and there is an abundance of water on the mine to drive any requisite machinery.—*Goginan, Aug. 1.*

ABSALOM FRANCIS.

CARDIGANSHIRE MINES, A.D. 1877—No XX.

SIR,—Having been called on to inspect some mineral property to the north of the Cambrian mines, I had to pass through them, the crossing being made near the engine-shaft at Esgair Ffraith, where I saw, without any exception, the finest and richest pile of copper ore I ever saw in all my life, being composed of malachite, bell metal, peacock ore, and black oxide of copper. In this pile there are several tons in blocks, varying from 2 cwts. down to ½ lb.; by the side of it there was a magnificent heap of lead ore, the latter coming from the western and the former from the eastern portion of the shaft, which is now down 4 fms. under the 10 fm. level, and in regular course of sinking. It is, I think, needless to say that there can be not the slightest shadow of doubt as to this opening out the greatest and richest mine in the Principality; and as this vast and great discovery is already made, all that is now wanted is a little time to open out this treasure to reap the most abundant harvest that has been achieved, in my opinion, during the present century. I am quite sure were Mr. Josiah Hitchins to see the ore now lying on the floors that he would have candour enough to admit that he never saw anything to equal it in the Devon Great Consols or any other mine that he has reported on; and here is another and brighter feather in his cap than the Devon Consols itself, and shows the solidity and reliance that can be accurately placed on his judgement of great and really good gossans. I have often heard my father, as well as many other members of our family, say they never saw a good gossan miss, and if ever it was shown to be the truth we could never have a more forcible example that at Esgair Ffraith. Perhaps the smaller luminaries should not entirely be overlooked, as all who reported predicted great results, although I must admit I was not pre-

pared to see so great a change in so short a distance of sinking. These mines, Tyn-y-Fron, and some others which I am not now at liberty to mention, will show a bright front in the commencement of 1878, as sure as the writer's name is— ABSALOM FRANCIS.

Goginan, Aug. 1.

P.S.—I expect the worthy manager will send the copper to market in as rough a state as possibly saleable, and he knows too much of the dressing of that kind of stuff to pollute the rivers with it. I think, if I might be permitted to express an opinion, I should wash dry through an inch riddle. Some of the malachite, I should say, will make 1*l.* percentage of 80.

THE LISKEARD DISTRICT.

SIR,—A correspondent in last week's Journal alludes to the improvement of the Trebeigh Consols, and its vicinity to adjacent property of former great value. I may add that the news from another property—West Mary Ann—is also of a very hopeful character. Shares are held firmly in the locality, and I do not doubt but if the present appearances continue an enormous rise must ensue, even though the prices of ores are lower than they were. There are signs of this district turning out prosperously generally to those interested, and I would advise those connected to hold on.

London, Aug. 2. NIL DESPERANDUM.

WEST BASSET MINE.

SIR,—Your correspondent, "A Shareholder," makes no attempt to justify the circulation of exaggerated reports of the indebtedness of which complaint was made. Sufficient that the report of a large overdraft at the bank had been incurred was found to be true. If this account of 25,000*l.* be correct there is not the slightest foundation for saying or insinuating it is 40,000*l.*, or that years of merchants' bills are left unpaid. There is no excuse for a shareholder who has not only neglected the duty to himself, but to his fellow-shareholders absent from the county, by failing to examine the accounts as presented at every quarterly meeting. A paid auditor does not excuse his neglect of duty. We always looked upon the independent audit of every shareholder at the meeting as the grand and effective guarantee which the cost-book possessed over limited liability companies. We are not going to justify or palliate what has turned out a mistake—to borrow so much money unknown to the shareholders generally. Black tin at 80*l.* a ton would long ago have wiped this out, and the names of those now held up before the public week after week would have been the best, cleverest, and most successful of men.

Look for one moment at the system adopted at West Basset, and in all honesty, if there be a credit side, give it to whom it is due. The suppression of the truth in this case is equal to circulating unfounded statements. Bills are paid monthly, and a discount of 5 per cent. is taken. (When this system was adopted there were bills owing of about 2500*l.* to 3000*l.*, which have not been discharged.) Let those who have had so much to say on the overdraft tell us how much is saved annually by these cash payments. If 300 tons of coal are consumed monthly, at 16*s.* per ton, and 5 per cent. discount be deducted, this saves 156*l.* per annum alone on one item. Thus the interest paid the bank is not all out of the adventurers' pockets.

There can be no excuse whatever, for any proprietor, editor, or reporter issuing week after week untrue statements on Cornish mines. The truth can always be obtained by any shareholder if he wishes to know it. What we condemn, and hope ever to do, is the ready welcome given to statements devoid of truth we find in certain papers to the injury of all and the benefit of no one. Instances are not lacking where men, and good men, have suffered, and are suffering to this day, through such unwarranted carele-sness in admitting idle talk or malicious rumours to extensive circulation.

The manly course for the shareholders in West Basset is to put their shoulders to the wheel by an united effort, and get the carriage out of the rut. Be men and not children—let your thoughts dwell upon how to do it. The executive have confidence in the future, as instanced by their increasing their interest in the mine. W.

July 30.

NORTH LAXEY MINE, ISLE OF MAN.

SIR,—In reply to "A Shareholder's" letter in last week's Journal I wish shortly to state that the reports from the mine weekly were consistent and true, as sinking had been done in each week; the delay was not for ten days consecutively. My report of the 14th, as a sort of *resumé* for the month, meant to convey the fact that we had during the month lost ten days of sinking, owing to the breakage, and inferentially, but for this, we might have sunk more; this might have been put plainer, but there was no intention to deceive or mislead. As far as I am personally concerned, my connection with the mine is not for what I get for its management, but from being one of the largest shareholders, and therefore I have always, so far, had to pay more than I received. My interest intrinsically is "A Shareholder's" interest, and in sticking to the mine, and doing, I believe, all that can be done by skill and attention, I have in view primarily a shareholder's reward—a good mine, if it is possible to be made one. If there is any doubt as to this nothing would please me more than the fullest inspection of the mine and our doings. As to the cost of agency, I will venture to challenge it for moderation side by side with any mine of the extent in the kingdom. R. ROWE.

July 31.

NORTH LAXEY MINING COMPANY.

SIR,—I was glad to see the letter of "A Shareholder" in last week's Journal, and in many respects I quite agree with his views and the principles he brings forward. I believe with him that it is as much the fault of the shareholders, and that they are as much to blame as the directors of the Glyn and Van Consols Mines for the indifference and lethargy which each and all (with one or two exceptions) have manifested in the detailed management of their properties. The all important question seems to be—What are the appearances (as per agent's report) at the mines, and their consequent effect upon the market? If the reports are powerful enough to send up the price of the shares on the market, the shareholders are quite satisfied, and never trouble themselves as to the actual value of the report; and if adverse reports are received the shares decline proportionately, and the great bulk of shareholders are at once ready to sell and clear out of what is apparently a worthless property, without even going to view it, and ascertain the real cause of the decline.

I believe if there were more genuine interest displayed by shareholders as a body in their various properties that we should be rarely startled by such announcements as those we have had in regard to Glyn and Van Consols, and of the many bubble companies which have deluded so large a number of the investing public. No wonder that companies are beginning to be regarded with disfavour, and even good and sound concerns are looked upon with a doubtful eye.

"A Shareholder in North Laxey" has evidently been roused by these delinquencies into enquiring as to the management of this mine, and it seems to me not unnaturally so, for I have often thought (although from what I have seen at the mine no extravagance or waste seems to take place there) that it might be carried on on a more economical principle with a view of benefiting the whole rather than a few. For instance, on reference to the accounts sent out each year just preceding the annual meeting I find directors' fees for the twelve months are 200*l.*, while the London managers remuneration appears in last year's accounts at 166*l.*, and all for what? I do not see or hear of many meetings being held, or much business being transacted in connection with the London management, except the keeping of the nominal accounts. I saw for myself that the principal portion of the accounts were kept at the mine, and I believe if the same economy had been manifested throughout as appeared to be the ruling principle there we should not have run so low in funds as we have done.

I cannot see why our directors should demand such remuneration as they appear to have had for the little services they render. I know concerns where the capital is more than twice the nominal capital of North Laxey where the directors do not take a tenth of the sum paid to the North Laxey directors, and do ten times the amount of work.

What we want is more activity both among shareholders as well as directors, and with the object of bringing this about I would suggest that in future the annual meeting should be held somewhat nearer the mine—say at Liverpool—where we could have both agents to enquire from, and if need be go over for ourselves and inspect the property, and thereby satisfy ourselves more than fifty reports could do. ANOTHER SHAREHOLDER IN

Manchester, July 31. NORTH LAXEY.

WHEAL GRENVILLE—MACHINERY.

SIR,—Absence from home must be my excuse for not replying to "Distant Shareholder's" letter last week. With reference to the pumps purchased on account of and now in this mine, I beg to say, from all I can see and hear, I do not think that some of them are likely to do that service that new work would perform, and seeing that they have to carry water some distance through a 17 in. column, with a powerful 80-in. engine, I am inclined to believe that it would have been to the company's advantage if more modern pitwork had been selected in the place of some old-fashioned material from one of the oldest mines in Devonshire. The present pumping-engine is I believe working well.—*Aug.* 2. T. B. LAWS.

AMERICAN MINING COMPANIES.

We have been requested to publish the following letter, which has been addressed to the Editor of the Engineering and Mining Journal of New York:—

SIR,—By the prospectus of the Arizona Chief Gold and Silver Mining Company of New York, recently placed in my hands, I find to my surprise my description of the Moss lode, as I saw it in 1864, cited in furtherance of this scheme. These citations are made from a paper of mine published in 1866 in the American Journal of Science, entitled "On Some of the Mining Districts of Arizona, near the Rio Colorado, with Remarks on the Climate." This paper was simply a statement of facts of my own observation respecting the geology, mineralogy, metallurgy, and climate of the regions I visited, and among other noteworthy things I described in some detail the Moss lode, one of the most remarkable outcrops of a fissure vein yet observed on this Continent, and visible even from the Colorado river, coursing east and west as a distinct sharply defined crest for at least three miles. A fragment of this paper, with important omissions is now used to promote the sale of the Arizona Chief, of which my first knowledge is the statement in this prospectus that it is a claim on the Moss lode. I protest against this unauthorised use of my statements of observations made 13 years since, and now presumably cited as a mining report. Explorations made on the Moss lode subsequently to my knowledge of the vein failed, as I am informed, in developing a valuable mine, a fact not mentioned in the prospectus of the Arizona Chief. B. SILLIMAN.

New Haven, July 14.

[For remainder of Original Correspondence, see to-day's Journal.]

Meetings of Public Companies.

DON PEDRO NORTH DEL REY GOLD MINING COMPANY.

The adjourned ordinary general meeting of shareholders was held at the City Terminus Hotel, Canon-street, on Wednesday,

Mr. S. LLOYD FOSTER in the chair.

Mr. J. E. DAWSON (the managing director) read the notice convening the meeting. The report and accounts were taken as read.

The CHAIRMAN said since the meeting in March, of which the present meeting was the adjournment, the shareholders had been furnished with all the information as it arrived from the mines, and the meeting had been called at the earliest moment possible. It would be remembered that at the special meeting held on Dec. 13 last authority was given to the directors to put up permanent pumping machinery and expend money upon it, and he believed he stated at that time that the mine would pay sufficiently to clear them of any chance of a call for the permanent pumping machinery, and up to the present it had done so, or pretty nearly. The effect of this was that they had been able to develope the mine more vigorously, and, as the shareholders had been informed in the monthly reports, very good discoveries had been made in the mine. Captain Vivian and the mining captains under him were much more hopeful than they had ever been. Capt. Vivian only took command of the mine last May twelvemonths, and his last reports were of a most favourable character. He had very little to say on the present occasion, as the shareholders had been furnished with all the information that the directors had received from the mine. The result of the last month's working had been a profit, and from all the directors could see they thought there would be a profit on the future operations; or, at all events, that the expenses would be paid, or very nearly so. As soon as the pumping machinery is at work they would be able not only to pay expenses but to return dividends to the shareholders; to what extent he could not say, as that would depend on what might be found, but he thought considerable dividends would be paid. The mine was looking much more promising in depth than it had done. When he last addressed the shareholders the mine was looking badly in depth, and the mining captains thought it was running out, but that had been proved to be a mistake, and they had found back work in the old workings which had enabled them to go on as they had done. He thought the balance presented was a very favourable one, and that everything promised by the directors had been perfectly carried out. On the next occasion of their meeting he hoped to be able to state that the affairs of the company were progressing satisfactorily. The work done at the mine was amply detailed in the report, and Capt. Vivian's report having also been circulated amongst all the shareholders, it would be unnecessary to say anything about it, but he must say for his co-directors and himself that they were perfectly satisfied with what Capt. Vivian had done. He was a most energetic and efficient man, and in many minor matters he had caused a great deal of saving to the company, especially in the matter of timber and in the tramway mentioned in the report, besides economies in other minor matters. Altogether he (the Chairman) did not think the mine could be worked more economically than at present, and great credit was due to Capt. Vivian for what he had done for the company. No doubt in the future he would go on and do his best for them. The company was, he thought, in a better position than it had been in for a considerable time. A letter received two days previously, dated July 4, from Capt. Vivian, stated that "the mine throughout is looking well. I have never been so well pleased as with this day's inspection, more especially with No. 8 shoot. No. 3 stope at the bottom of the mine, which is the deepest point yet reached. The lode is large, and has a splendid appearance, producing general work of first-class quality; all that is now wanted to make the mine a great success is deeper drainage, and you may be sure no time will be lost in effecting this object. Other points are looking quite as well as when previously reported on." That was Capt. Vivian's last report, and he thought they might consider that they had arrived at a time when there was every chance of the mine proving a success to at least a certain extent, and that dividends would be paid. The directors had given all the information they could to the shareholders, and he did not think any company in existence gave information to its shareholders so fully, freely, and clearly as this company. (Hear, hear.) He congratulated the shareholders upon having authorised the directors to send out the monthly slips to all concerned. It was a very wise course, as by this means the shareholders were put in possession of all the information that can interest them. The meeting would have been called earlier, but it was impossible to get the reports and statements of accounts, on account of Captain Vivian being new to the country, and short-handed in consequence of the cutting down the expenditure, and the consequent smaller amount of assistance. He had not had the same means by clerks and otherwise of getting out the accounts that the managers had in former times. The expenditure had been cut down to the utmost extent, as the shareholders would see by the report, and he thought there was some credit due to the management for having done so. Of course, the output had been less, but the discoveries had been more, and the mineral that had been passed over by former managers had been found to some extent. For this the directors took no credit, but he thought praise was due to Capt. Vivian and to those under him for what they had done. He would be very happy to answer any questions, and would only now move "That the report and statement of accounts presented to this meeting be received and adopted."——Gen. D. DOWNING seconded the motion.

A SHAREHOLDER asked if the directors could give any idea when the pumping machinery would be finished?——The CHAIRMAN, in reply, referred to the report, which stated "Capt. Vivian originally estimated that six months would suffice to complete this machinery, but doubtless that time would be somewhat extended for the reason above mentioned (that was on account of the difficulty of getting suitable timber). As Capt. Vivian had not recently alluded to the question of time the directors have written to him on the subject." Up to the present time no reply had been received to that letter, but it was expected that one would be received by the end of the month, when it would be circulated in the usual monthly slip.

Mr. C. S. HILL thought according to the last balance-sheet the company had about 7000*l.* or 8000*l.* in hand. That was in December last, and he wished to know what was the amount now in hand.

The Managing Director replied that the amount now in hand was between 6000*l.* and 7000*l.*

Mr. HILL asked if there was any probability of a call having to be made?——The CHAIRMAN said there was not the slightest.

Mr. ROBINSON asked what was the amount of the directors' remuneration, as in the accounts that and the auditors' fees were lumped together.

A SHAREHOLDER, who said he probably knew nothing about the matter, wished to know what the directors of such a company had to do in London? Did they make the contracts for the pumping machinery, or superintend the working of the mine? He thought the London expenses heavy for a company earning nothing.

The CHAIRMAN replied that the directors' fees were 250*l.* per annum, divided amongst them, and they attended the office about four or five times between the board meetings. No company could have been more carefully looked after than this company was. (Hear, hear.) He himself was frequently at the office, and General Downing and Colonel Weller, his colleagues, were also very attentive to the affairs of the company. If the property were their own they could not look after it more carefully, and he very much doubted whether any company could be found the affairs of which were attended to more closely and better than in this company. If this had not been the case the company would not have got out of the difficulty it was in 12 months ago—when winding-up was thought of—into its present position. (Hear, hear.) He could assure the shareholders that so long as the present board had any connection with the company its affairs would be looked after most carefully. Any shareholder who chose to call at the office could see vouchers for every item in the accounts, and could have everything explained to him. All the information received from the mine was sent straight to the shareholders, whether good, bad, or indifferent. Before the information was sent to the Stock Exchange and the papers nobody was allowed to see it, so that there should be no unfair advantage given to speculators.

A SHAREHOLDER said perhaps the gentleman who asked the question as to what the directors' duties were had not been to the office of the company. He had, and from his visits there he felt, as the shareholders ought all to feel, personally grateful to the directors for their able management and the small amount they levy upon the company for fees.

The CHAIRMAN, in reply to another observation, said there were 1200 shareholders, and the transfers were not at all a small operation. He would not go into all the details of the work done at the office, but if any of the shareholders would call at the office they would see for themselves the amount of work that has to be done. He did not think the work could be well done cheaper.

Mr. ATTRELL asked what the item of 259*l.* 12*s.* for travelling expenses was for?

The CHAIRMAN, in reply to Mr. Robinson, stated that the salary of the managing director was 350*l.*, and that the clerks received 191*l.*

Mr. THOMPSON asked for an explanation of two of the items in the Brazilian accounts—commission 424*l.* 4*s.* 11*d.* and stationery and charges at mines 633*l.* 10*s.* Both items without some explanation struck him as being very large.

A SHAREHOLDER asked why the transfer fee was abolished?

The CHAIRMAN, in reply, said with respect to the question of the registration fee that had been abolished with the approval of the shareholders. It was mentioned at one of the meetings that as the fee gave the Stock Exchange brokers much trouble, and the amount being so small, it was wiser to do away with it altogether. It also led to other matters prejudicial to the interests of the company. The amount received for transfer fees had always been a very unimportant one. With regard to the directors' fees, he was sure his expenses in connection with the company were much larger than his fees. The law expenses in Brazil had amounted to 242*l.*, because, as the shareholders were aware, the mine was claimed by other parties. Then the stores had been necessarily large, and the cost of telegrams alone had amounted to 122*l.* It had not been thought worth while to put all the minor items into the balance-sheet, but the vouchers for every item could be seen by any shareholder who would call at the office. Several of the expenses had been materially cut down, and he did not see where much greater economy could possibly be practiced.

In the course of a discussion Mr. HILL deprecated having non-paid directors, and suggested that the items of the accounts should in future be presented more in detail.

The CHAIRMAN said this should be done in future.

M. T. G. TAYLOR said the mine had been declared to be worthless by those who had since found out that it was a very promising concern, and he looked forward to the time when Don Pedro would pay good dividends, but to do this he thought more cheese-paring would have to be practised. He wished to know whether the directors and the managing director were receiving now as much as when the company paid dividends of 100 per cent.? Mr. Taylor also asked if the company had any slaves at work on the mine?

The CHAIRMAN said, with respect to the question as to travelling expenses, that item included Capt. Vivian's expenses to the mines, and the expenses home of the men whose engagements with the company had ceased, and who under their agreement with the company were to be sent home free of charge. It also included the expenses of the men who had gone out to replace the men leaving the mines. With respect to the payment to the directors, in the old days of the company the Chairman got as much as all the directors now get together. The directors worked for two years for nothing. The Chairman also stated that the present offices were very much cheaper than the old ones. The item of stationery at the mine, &c., was made up of a great many details, which could be seen at the office. With respect to the employment of slave labour, the company was bound to employ slaves to some extent. They were hired from their owners at a certain charge per annum, and were always treated as well as possible. If this were not done it would be utterly impossible to get sufficient free labour in the Brazils. He was sure the slaves engaged on the mine would be very sorry to go back to their old masters. He objected to slavery as much as anybody could, having been connected with such men as Wilberforce and Buxton, and his great aunt being Elizabeth Fry: but where the necessity arises it must be abided by. Slaves were employed as little as possible. The item of commission was entirely owing to the charges of the bank and general agency charges in the Brazils on the remittances.——The reports and accounts were then adopted.

Mr. HILL proposed the re-election of the Chairman, who was the director retiring by rotation.

Mr. ATTRILL seconded the motion, which was carried unanimously.

On the motion of Mr. TAYLOR, seconded by Mr. THOMPSON, the auditors (Messrs. Quilter, Ball, and Co.) were re-elected. A resolution was also passed on the motion of the CHAIRMAN, seconded by Mr. E. K. BLYTH, for altering the clause in the Articles of Association directing that the annual meeting should be held in March, so that the necessity of calling a *pro forma* meeting, in case the accounts should again be unavoidably delayed, will no longer exist. It was also decided that there should be two general meetings in each year.

Mr. ATTRILL proposed and Mr. ROBINSON seconded a vote of thanks to the Chairman and directors, which terminated the proceedings.

BELSTONE MINING COMPANY.

The ordinary half-yearly meeting of shareholders was held at the offices of the company, Royal Exchange Buildings, on Tuesday,

Mr. JAMES WILSON in the chair.

Mr. F. R. REEVES (the secretary) read the notice convening the meeting.

The CHAIRMAN said the meeting had been convened *pro forma* in compliance with the Articles of Association, as he would have to move that it should be adjourned until August 28, when the report of the directors for the past half-year would be submitted. The directors had issued a prospectus inviting applications for 12,000*l.* of preference shares, but since then the mine had much improved. Lately large quantities of ore had been raised, and when he was at the mine during the previous week they were bringing up from 40 to 50 sacks of ore a day from the discoveries which were being made. No doubt if there were more men at work larger quantities of ore would be raised, but what he had seen brought up would pay 300 per cent. profit upon the working cost.

A SHAREHOLDER said he had heard that the men were unable to work in parts of the mine owing to the want of ventilation.

The CHAIRMAN replied that the mine was admirably laid out, and no complaints had been made about the want of ventilation. He with another director had been to the extreme end of the deepest levels, and they had experienced no difficulty in this respect, or with regard to light so far as mining was concerned. Where the workings were not in direct communication with the shaft the air was, of course, not so good as where the communication was direct. The mine was being laid out in what was called a "miner-like" manner, and the access to the different levels was quite easy, and everything appeared to be going on very well indeed. There was too much water in the bottom levels to work well with the present pumping machinery, but the great difficulty had been the insufficiency of capital to work the mine as vigorously as it should have been, but if they got on as well as they had during the past week or two there would be enough money to work the mine properly without going to the shareholders. The debenture-holders had subscribed 3000*l.*, which had been spent on the mine, and the interest to be paid on the debentures was 10 per cent. So long as the interest on the debentures was paid the property would not be touched, but if it ceased the mine would be lost to the shareholders. It was, therefore, proposed to issue the preference shares so as to provide a sufficient amount to pay off the debentures when they become due, and also to provide working capital. If at the time the circulars were sent out the prospects of the mine had been as good as they were at the present time people might have been asked to take ordinary shares instead of preference shares; but after all it did not matter much, for if the mine were really successful 10 per cent. would not be much to pay on the preference shares. He did not suppose the shareholders would be content to lose the property for 3000*l.*, and, therefore, he strongly hoped that the circular inviting subscriptions for the preference shares would be well responded to. He had refused to sell his shares at 250 per cent. premium when the prospects were not so good as at the present time, for the lode at the 80 fm. level had not been proved as it now had. A friend of his would, he thought, invest 1000*l.* in the proposed shares, and to show their faith in the mine his brother directors and himself had agreed to convert their debentures into an equal proportion of preference shares.

A SHAREHOLDER asked how many debenture-holders there were?

The CHAIRMAN replied about 20, holding between them 3000*l.* of debentures. If the preference shares were taken up 3000*l.* would be set aside to pay off the debentures when they became due. By adjourning the meeting the directors would have time to look about and to ascertain the result of the circular; and, therefore, he moved the adjournment of the meeting until Aug. 28.——Mr. HILLIER seconded the motion, which was carried unanimously.

The usual compliments to the Chairman having been passed, the proceedings terminated.

KINGSTON CONSOLS SILVER-LEAD MINING COMPANY.

The annual general meeting of shareholders was held at the offices of the company, Gresham House, Old Broad-street, on Tuesday,

Mr. S. F. PORTER in the chair.

Mr. D. FORREST (the secretary) read the notice convening the meeting and the following report:—

July 27.—Herewith we beg to submit you our report and opinion of the future prospects of the mine, together with the amount of work performed during the last six months, ores sold, &c. The 40 has been extended west of the engine shaft 16 fms.; the lode has been on the average about 4 ft. wide, composed of capel, spar, flookan, occasional stones of blende, copper, and lead, with a large stream of water flowing from it, underlying north about 2½ ft. in 6 ft. The 0 has been extended west of the shaft 21 fms. 2 ft.; total distance 55 fathoms. In this drivage some bunches of blende and lead have been driven through; the lode in the end is 2 ft. wide, its component parts being capel quartz, flookan, with a little blende and lead—a kindly lode; and, judging from the productive lode sunk through in No. 4 winze under the 18, we are of opinion that in a very short distance more driving a productive lode will be met with; driving by six men, at 70*s.* per fathom. The 18 has been extended west of shaft 20 fathoms; in this drivage 15 fathoms of profitable blende and lead ground has been driven through, varying in value from 1½ ton of blende and ¼ ton of lead per fathom, or, say in money value, 10*l.* per fathom; the lode in the end is 3 ft. wide, of gossan, capel, mundic, with occasional stones of blende and lead, of a very promising appearance to soon improve; driving by two men, at 80*s.* per fathom; total distance from shaft about 110 fathoms. No. 2 winze has been communicated to the 30. No. 3 ditto is down about 3 fms. below the level, and in advance of the 30 about 15 fms., worth 5*l.* per fathom; sinking by two men, at 70*s.* per fathom. No. 4 winze is sunk 8½ fms. below the level and 45 fms. in advance of the 30 fm. level end; this has been sunk all the distance in a splendid lode of blende and lead, worth now about 3 tons of good blende per fathom, and from 10 to 15 cwts. of lead, or say, in money value (for length of winze 9 ft.), fully 45*l.* per fathom; sinking by six men, at 8*l.* per fathom. No 1 stope, in the back of the level, by four men, at 40*s.* per fathom, worth 7 cwts. of lead and ½ ton of blende per fathom, or say, in money value, 7*l.* 10*s.* per fathom. No. 2 ditto, by four men, at 30*s.* per fathom, worth ¼ ton of lead and 1 ton of blende, or 7*l.* per fathom. No. 4, by two men, at 18*s.* per fathom, worth ¼ ton of lead and 2 tons of blende, or 12*l.* per fathom. A stope in the back south, on north and south lode, by two men, at 25*s.* per fathom, worth ½ ton of lead per fathom. The 18, east of shaft, is driven about 3 fms.; the lode in the end 3 ft. wide, producing about 10 cwts. of blende per fathom, and occasional stones of lead; driving by two men, at 70*s.* per fm. Our last sale of ores weighed out in money value 355*l.* 1*s.* 3*d.*; and looking at the less underlie of the lode in the bottom of the mine, together with the beautiful and productive lode in the No. 4 winze, we recommend a vigorous and energetic prosecution of the mine. The ground driven in levels and winzes sunk and stoped (about 400 fms.), which have produced about 90½ tons of silver-lead, 371½ tons of blende, 2 tons of copper ores, realising 2824*l.*, lead averaging about 15*l.* 10*s.* 9*d.* per ton, and blende 3*l.* 16*s.* per ton, showing a profit on the six months' working of about 50*l.*; and, had it not been for the depression in the metal market during the last three months the returns would have realised fully 350*l.* more, as in the first three months of the year our lead and blende realised about 2*l.* per ton more. We have done sundry new work at surface and underground, such as putting in round and other buddles, sheds over dressing-floors, about 140 fms. of railroads, five new slime pits, levelling ground for coal sheds, new tram wagons, connection for balance-bob, &c., which cost about 140*l.* Number of hands at present employed underground and at surface, 75. The machinery is all in fair working order.—W. HANCOCK, J. CHYNOWETH.

The CHAIRMAN said before proceeding to the business of the meeting it would perhaps be as well that Capt. Hancock should say a few words in addition to what he had already said in his report.

Capt. HANCOCK said he was not aware that he could add anything material to his report. He had only been in charge of the mine for a period of six months, and during that time he had been working at a good profit, and the mine was at the present time looking exceedingly well. It would, of course, take some considerable time to develope it properly, but he thought the prospects were very good indeed. If they could only push out the driving at the 30 there was no doubt that in the course of three or four months something exceptionally good would be reached, for ten men could very easily raise 100 tons of lead and blende ores per month. He thought the mine was in a very fair way of working, and that it would be a great pity to disturb the winze until the lead in it could be properly taken away. If they waited until the 30 fm. end got forward, every fathom of ground would give them 20*l.* profit, for the 30 was the best end he had yet seen in the mine.

A SHAREHOLDER asked if the mine henceforth was likely to pay expenses?——Capt. HANCOCK replied that the mine would undoubtedly pay expenses, but they ought to be working a little more vigorously than at present. The lead ore raised was of a very fair average, but unfortunately the prices of lead and blende had lately fallen very considerably.

The CHAIRMAN then went through the accounts seriatim, and explained each item to the satisfaction of the meeting.

Major STUDDY suggested that the accounts should be presented more frequently than at present.——The CHAIRMAN pointed out that such a proceeding would entail additional expense, which in the present position of the company was not desirable.——After a few questions of detail had been replied to, the report and accounts were, on the motion of the CHAIRMAN, unanimously adopted.

Some discussion then ensued upon the question of raising funds to pay off the pressing liabilities; and it was suggested that if possible 1500*l.* should be raised so as to pay off the creditors who were pressing the company, and provide a small working capital.

In reply to questions of Major STUDDY and Mr. ROSE, it was stated that every liability of the company up to that day was 216*l.* in debentures, which was a debt upon the mine, 2000*l.* advanced with collateral security, and an other advance of 1000*l.* About 500*l.* would clear them of the immediately pressing liabilities, and 1000*l.* altogether would clear away all the debts which it would be necessary to meet for some time to come. The difference in the price of the lead sold was no less than 4*l.* 7*s.* per ton, the highest price having been 19*l.* 7*s.* as against 15*l.* per ton at the present time; and besides this blende had fallen 2*l.* per ton. That difference on the hundreds of tons of lead and blende sold much more than represented the amount which it was stated it was necessary to pay off as soon as possible.

Various suggestions having been made as to the best means of raising the necessary funds, several of the directors and shareholders present promised to sub-cribe to debentures (which can be issued in small or large sums); and it was then decided, on the motion of Mr. ROSE, that a circular should be sent to the shareholders not present informing them of the necessities of the company, and inviting them also to subscribe for debentures.

Mr. ROSE then proposed the re-election of the auditor, Mr. H. W. S. Whiffin.——Major STUDDY seconded the proposition, which was carried,

The proceedings closed with a vote of thanks to the Chairman and directors.

ABERDAUNANT LEAD MINING COMPANY.

The eighth ordinary general meeting of shareholders was held at the offices of the company, New Broad-street, on Saturday, July 28,

Mr. C. S. HILL in the chair.

The notice calling the meeting was read by Mr. R. SMITH (the secretary).

The reports of the directors and captain were as follows:—

July 19.—Herewith I beg to hand you the balance-sheet to the 30th ult., and the report of Captain S. Toy, to which I refer. Since the last report the engine-shaft has been sunk 22 fathoms. In 9 fms. further sinking, which will be 15 fms. below the deep adit, a cross-cut will be put out to intersect the main or Van lode. Until that be accomplished the prospects as regards that lode remain unchanged—that the success of the mine mainly rests upon a discovery of lead therein at the points of intersection within the depth originally contemplated in sinking the shaft. In this the anticipations of the directors, and particularly of practical men who know the district, remain the same.

The directors regret that their expectations regarding the south lode in Crowlwm sett have not yet been realised. The cross-cut has been carried many fathoms beyond the point at which they were led to expect that the lode would be found. It is still being continued. In the course of the drivage many branches of lode have been met with, and fresh streams of water coming from the end—all indicative of the proximity of a lode, but so far none has been found of sufficient size to warrant an exploration upon it. No effort will, however, be spared to determine whether such a lode is within the limits of the sett, and this must soon be known.

As regards the finances, the directors have made arrangements for the issue of further shares, the proceeds of which will, they trust, enable them to realise the main object of the workings—the intersection of, and exploration upon, the great Van lode.

This being a heavy undertaking it will necessarily take some months before any reliable opinion can be offered as to results; but, meantime, they feel that all the surroundings justify perseverance, and they are sanguine of ultimate success.

Messrs. W. S. Crowe and C. S. Hill, directors, retire by rotation, and being eligible offer themselves for re-election. Messrs. R. T. Alison and H. Swaffield, auditors, also offer themselves for re-election.

July 17.—In handing you my report of this mine for the general meeting of the shareholders, I beg to say that we had sunk the new engine-shaft 20 fms. below the surface, when we were obliged to suspend the sinking on account of the great increase of water, and the engine at that time not being ready to work we drove a cross-cut at the deep adit level 12 fms., and got under the shaft, where we commenced a rise 7 fms, and communicated with the bottom of the shaft, and drained all the water from it. Since then we have cut it down to its full size (9 ft. by 5 ft.) to the deep adit level, where we have cut a large plat, and taken up all the top water. This shaft is now sunk 6 fms. below this level. We have set the men to sink the shaft 15 fms. below the deep adit, and they have to sink 9 fms. more to finish their contract. This being completed we intend driving a cross-cut north to intersect the large lode that has been cut through at the 10 fm. level, where it is 29 ft. wide, and from the appearance of the lode when we were driving east and west on it at that level, and from where we broke some good lead, I think we may reasonably expect at deeper levels to meet with a better lode, which I hope will prove remunerative and satisfactory to all interested.

No 2 adit has been driven east several fathoms through a large lode, which has produced some good stones of lead. We have put up a rise 7 fms. above the roof of this level, which has produced some lead. We have also new timbered this level 9 fms. in length. No. 1 adit has been driven 10 fms., and secured with timber. The lode is 6 ft. wide, and has produced some saving work for lead dressing.

Crowlwm (east part of the sett): We have driven a cross-cut south towards the new lode 30 fms. In this drivage we met with a lode 2 ft. wide, underlying 2 ft. 6 in. per fathom, bearing about 20° north of east and south of west. We opened on this lode 2 fms., which produced some nice pieces of lead. In driving this same cross-cut the last 10 fms. south we have met with several small branches, from 3 ft. to 4 ft. or 5 ft. apart, some of them producing stones of barytes, with a little lead, and others containing soft flookan, spots of copper ore, sulphur, and sulphate of lead throughout, and discharging water freely. We have not met with any branches during the last fortnight, but hope to intersect the lode soon.

Surface: We have brought on the mine a new double cylinder winding and pumping engine. We have cleared out foundation for engine-house, quarried and carted stones, and erected a new engine house, 33 ft. long by 24 ft. wide. The walls are of the best materials, well put together, and covered with a galvanized roof. The engine is now properly fixed in the house, and can be put to work in a short time when required.—SIMON TOY.

The CHAIRMAN said the report which the directors had the pleasure of submitting was necessarily short, from the circumstance that no new feature deserving of notice had occurred since the last general meeting. Any remarks he had to make must necessarily be not only founded upon, but be little more than a repetition of the report itself. The principal work on hand at the mine, and on which its future profitable development depended, was the sinking of the shaft, which had now attained to a depth of about 7 fms. below the deep adit, and 8 fathoms more were required to meet the point from which a cross-cut was to be driven to intersect the lode at the 10 fm. level, which produced good stones of lead. There was every reason to hope that as they got deeper they would have a better result. There was erected on the ground an efficient engine, and all necessary appliances for use whenever their services might be required. The water at one time was rather a serious trouble, and delayed progress—that was before the engine was erected. Since that time, by the cross-cut which was made by the deep adit, and connected with the descending shaft, the difficulty had been got rid of, and the mine was efficiently drained to the lower levels. As far as one could speak there was a reasonable confidence of the intersection of the lode. In about four months they hoped to get to the point where the lode would be reached. With regard to the Crowlwm sett, the expectations regarding the south lode there had not yet been realised. There was reason to hope and believe that the lode was still ahead of the cross-cut which was being driven with the object of intersecting it. The question would soon be settled one way or the other. They were reasoning upon the supposition that the lode maintained a compact character. If it were split into veins and branches the question might become a different one; he said this because in the course of driving the cross-cut several veins or branches had been met with, and whether those were perfect lodes broken up or tributaries to it it was impossible under present circumstances to say, and time alone would solve the difficulty. The directors had every reason to be satisfied with the conduct of the mine by Capt. Toy, who was an efficient manager and agent. In conclusion, the Chairman moved the adoption of the report and accounts.——Mr. W. S. CROWE seconded the resolution, which was put and carried without any discussion.

On the motion of Mr. ENDEAN, seconded by Mr. GEORGE SMITH, the retiring directors (Mr. C. S. Hill and Mr. W. S. Crowe) were re-elected.

On the motion of a SHAREHOLDER, the auditors (Messrs. R. T. Alison and H. Swaffield) were re-selected.

Capt. TOY, in answer to Mr. Endean, said that from the water from the forebreast, and also from other indications, there was reason to believe that the south lode in Crowlwm sett was still before them. The ground was easier, which was a good indication.

The SECRETARY then explained the position of the workings by the aid of a plan, after which the proceedings terminated with a vote of thanks to the Chairman.

WHEAL CREBOR MINING COMPANY.

A general meeting of shareholders was held at the offices of the company, Gracechurch-street, yesterday,

Mr. J. Y. WATSON, F.G.S., in the chair.

Mr. C. P. PARRY (the secretary) read the notice calling the meeting.

The accounts which were submitted showed a balance of assets over liabilities of 115*l.* 2*s.* 4*d.*

The CHAIRMAN moved "That the accounts be allowed and passed, and be printed and circulated among the shareholders, together with the agents' report and proceedings of this meeting."——This was seconded and carried.

The CHAIRMAN then read the following report of the committee:—

The committee have to report that the sale of ore for the past quarter, owing to the very low price obtained for it, resulted in a loss of 398*l.* 14*s.* 5*d.*, and the balance in hand at last meeting of 513*l.* 16*s.* 9*d.* has been reduced to 115*l.* 2*s.* 4*d.* The agent states that new pitwork and a water-wheel will be required for the new shaft. On July 12 the Government Inspector of Mines wrote the agent calling his attention to five different things that required to be attended to at once. He also intimated that having previously called Capt. Goldsworthy's attention to the same thing he should take proceedings against the company if there was any further delay. The committee ordered the agent to attend to the Inspector's requirements, and informed him that it was the first intimation they had ever received in regard to them. The agent reports that the 120 east has improved to 20*l.* per fathom; and, though it is difficult to form any correct estimate, he hopes to sell from 200 to 220 tons of copper ore for the next quarter, and this at a fair price would about meet the cost. To show the difference in the prices of ores the committee would remark that 12 months ago the best ore realised 4*l.* per ton. In January last 3*l.* 4*s.* In April the average was nearly 3*l.* The average of the last was 2*l.* 9*s.*

The report of the agent was as follows:—

Aug. 2.—Since your last general meeting the 120 has been extended east of winze 4 fms. 5 ft. When we commenced to drive east from winze the lode was 5 feet wide, worth 15*l.* per fathom; but it has since increased both in width and value, and is now 8 ft. wide, 4 ft. of the north part of which is composed principally of mundic and capel, but the south part is worth 20*l.*, per fathom, a strong goodlooking lode. The lode in the stope in the back of the 120, west of winze, is 6 ft. wide, and like the lode in the end—4 ft. of the north part is hard and coarse, and is of little value, but the south part is worth 8*l.* per fathom. The lode in the 108 east is 3 ft. wide, and worth 8*l.* per fathom. In the west stope in the back of the 108 the lode varies from 2 ft. to 6 ft. in width, and is worth on an average 12*l.* per fathom. In the east stope in the back of the same level the lode is 4 ft. wide, worth 8*l.* per fathom. The lode in the 72 east is small and poor, but the ground is favourable for driving. The lode in the 48 east is large, but we are carrying only 3 ft of the north part, which is composed of quartz, capel, and mundic, and yields a little copper ore, but not enough to value. The lode in the stope in the back of the 48 is also large, being from 8 ft to 9 ft. wide; but as in the end, we are carrying only 3 ft. of the north part, which is worth 4*l.* per fathom, which will hardly pay for stoping; but this stope being in the back of the shallowest level in the mine, and within a few fathoms to where the new shaft will come down, I think the rising and stoping ought to be continued, as it will be proving the ground between the 48 and surface, and will enable us to effect a communication with the new shaft in a shorter time. The new shaft is sunk 7 fms. 1 ft. below surface, but the water being so quick we are obliged to suspend operations until pitwork is put in the shaft.—JOHN ANDREWS.

The proceedings then terminated.

WHEAL UNY MINING COMPANY.

A general meeting of shareholders was held at the company's offices, Austinfriars, on Thursday,—Mr. R. MCCALLAN in the chair.

Mr. JAMES HICKEY (the secretary) read the notice convening the meeting and the minutes of the preceeding one, which were confirmed. The statement of accounts, showing a loss on the three months' working of 299*l.* 2*s.* 5*d.*, and a balance of liabilities over assets of 1276*l.* 9*s.* 4*d.*, and the report of the agents was then submitted.

The following is the agents' report:—

July 31.—The lode in the back of the 60, west of incline shaft, is worth 8*l.* per fathom. We are rising in the back of this level to communicate with the 40, to open ground for stoping and for ventilation. The stope in the back of the 110, east of King's shaft, is worth 8*l.* per fathom. Two stopes in the back of the 120, east of King's, are worth 20*l.* per fathom in the aggregate. The lode in the 130 end, east of King's, is worth 6*l.* per fathom. The lode in the stope in the back of the 130 is worth 9*l.* per fathom. The 140 end, east of King's, is worth 9*l.* per fathom. Three stopes in the back of this level are worth 7*l.*, 8*l.*, and 10*l.* per fathom respectively. King's shaft is made complete to the 150, and the end east is being forced on; the lode is worth 7*l.* per fathom. There is a good shoot of tin in the bottom of the 140, east of this end, which we hope to intersect in the 150. The 150, west of incline, is worth 8*l.* per fathom. Two stopes in the back of this level are worth 8*l.* and 10*l.* per fathom respectively. The 160 end, east of Hind's shaft, is worth 9*l.* per fathom. The 160, west of incline, is worth 10*l.* per fathom. A stope behind the 160 end is worth 8*l.* per fathom. Hind's shaft is sunk below the 160 for bearers and cistern, and new pitwork has recently been fixed from the 160 to the 150. The sinking will now be continued below the 160. The lode in the bottom of the shaft is worth 20*l.* per fathom for the length of the shaft, which is 14 ft. We have sold during the past 12 weeks 94 tons of tin; this is a greater quantity than has ever before been sold in the time; but, unfortunately, the price is also lower than at any previous period. The mine is yielding good quantities of tin, and we still hope that with a general revival of trade the price of this metal will also improve. If the metal tin should enhance in value the mine would soon give good profits.—WM. RICH, MATTHEW ROGERS, JOSEPH RICH.

The CHAIRMAN remarked that the shareholders would observe that although the accounts showed that they had made a loss since the last meeting, they would see that it had arisen entirely through the low price of tin, as the mine was looking well and was being conducted with economy. He concluded by formally moving that the report and accounts be received and adopted.

Mr. MARSHALL remarked that they appeared to be getting a low price for their tin; though he noticed that they had 38 tons last month against 30 tons in the preceding one; and it appeared to him that if they could keep up to an average of 35 tons per month they would be able, at even 40*l.* per ton for their tin, to make a profit.

Mr. PIKE said that their tin was usually 30*s.* per ton less than South Condurrow. They had sold more tin during the present account, but the price realised had been less. They had only got about 40*l.* for their tin, and their last parcel was sold at 39*l.* 10*s.* What they wanted was 4*l.* per ton more in order to pay costs. Their produce was certainly increasing, and they had also some tin on the floors which they could not turn to account, as it was mixed with arsenic and wolfram. To make this marketable they required a calciner. As to the coming winter, he thought they could make an arrangement to keep the Perseverance engine going—that is to say, working the engine with the consent of the owner. The effect of this would be that they would only have to lift the water 20 fathoms instead of 150 fathoms.

Mr. HICKEY, in reply to a shareholder, stated that the arrears of call were about 190*l.*, some items having been paid since the account was made up. They were all perfectly good, and all arrears of the last call.

The report and accounts were then unanimously received and adopted.

The CHAIRMAN said that the next business was the consideration of the call. He thought the best course would be to make a call to cover the loss of the last three months, for which a 2*s.* call would fully suffice.

Mr. MARSHALL thought it would be preferable to make whatever call might be necessary to cover the entire 1276*l.*, or leave the question over for the next three months. In that time either things would be much better or much worse, so that in either case they would be better able to judge of their prospects.

Mr. TRURAN said that the only difference than the making or delaying of the call was that it might affect relinquishments.

The SECRETARY did not anticipate that there would be any relinquishments, and they would be able to carry on for the next three months without a call.

Mr. MARSHALL said the only question was whether the agent could reckon on producing 35 tons per month. This, if the expenses were kept at 1300*l.*, would leave them 100*l.* per month profit. It was a satisfactory feature that they had the best ground in the lowest level.

Upon the proposition of Mr. MARSHALL, seconded by Mr. PIKE, it was resolved that the debit balance be carried forward to next account, and the usual complimentary vote of thanks having been given to the Chairman the proceedings terminated.

ILLOGAN TIN AND COPPER MINING COMPANY.—An extraordinary general meeting of shareholders is called for to-day (Saturday), for considering the winding-up of the company, the appointment of a liquidator, and authorising him to apply to the Stannaries to wind-up under the supervision of the Court.

[For remainder of Meetings see to-day's Journal.]

INFRINGEMENT OF THE MINES REGULATION ACT.—Mr. George C. Hancock, the resident agent of Trevaunance Mine, in the parish of St. Agnes, was summoned before the magistrates at the West Power Petty Sessions, Truro, on Saturday last, for neglecting to post in a conspicuous place on the mine a copy of an abstract of the Metalliferous Mines Regulation Act, as required by the Act. Mr. R. M. Paul appeared for the prosecution. Dr. Le Neve Foster stated that he visited the mine on June 27, 1876, and complained that there was no abstract posted up on the mine. He sent an abstract of the Act to every mine on July 1 every year since he had been Inspector, and he posted them all himself. On June 26 this year he visited the mine, and could find no abstract posted up anywhere.—Mr. Hancock, in defence, said just after Dr. Foster had called his attention to the matter in 1876 he had an abstract posted in "the dry," and he heard nothing of the matter until Dr. Foster called his attention again to it on June 25 this year, and then he sent his clerk to have another posted up, and not half-an hour after he did that he received a summons. No new men had been engaged on the mine since the first abstract was posted up. He believed there was no copy up when Dr. Foster visited the mine. A fine of 1*s.* with costs was inflicted.

WHEAL COMFORD—A LEGITIMATELY CONDUCTED MINING ADVENTURE.—One of our correspondents personally inspected the above mine, and declined to forward us a report until he had satisfied himself of the truth of the agent's report. He says it is both pleasing and creditable to find a gentleman of position resorting to the

early principles of mining, and dealing with the undertaking as he would with a business, and in the full conviction that eventually he will succeed, from the simple fact of being true to himself and the few who still believe in honesty of purpose rather than in trickery and untrustworthy reports. For many months one local gent eman (with a friend or two) has carried on the mine which is now opening up so satisfactorily. The modest report of the managing agent is highly creditable to him.—*West Briton.*

FOREIGN MINES.

ST. JOHN DEL REY.—Telegram from Morro Velho, dated Rio de Janeiro, July 30: Produce, 11 days, second division of July, 15,250 oits., 5909*l.*; yield 8·2 oits. per ton.

DON PEDRO.—Mine Captain's Letter, dated June 30: The ores extracted have been derived from the same places as when last reported on—Nos. 5, 6, and 8 shoots. General work is of a moderate quality. No boxwork available. Stoping operations have been carried on satisfactorily, considering the small force at the horizon of adit on No. 8 shoot, but in the bottom of the mine progress is rather slow, in consequence of the lode taking a greater dip, and there is more water to contend with as the junction is formed with the two shoots, as all the water from the southern part of No. 6 shoot is now embraced in No 8 shoot. Little of any consequence has been done in No. 1 stope on this shoot, as it has become very wet for excavating, and we think it advisable as soon as the set is fixed to suspend this work until deeper drainage. The incline rise westward, from the new level from adit, is being kept on satisfactorily, and the general work from the same is of a moderate quality. The driving east has been continued through crushed ground, and samples from the same produce moderate general work. The works on No 5 shoot have been kept on wi hout change to note. Prospective and Running Work: The repairing of adit level has been continued. The force from the shaft has been repairing the water level. The incline from adit up to Symons' shaft is being continued. A force of two natives has been kept on in the driving going towards the canoa from the 30, the ground being very hard for excavating. The new tramroad from the reduction works to the entrance of the adit level is completed to-day, and all other running work kept on.

— Capt. Vivian, July 4: The mine throughout is looking well. I have never been so well pleased as with this day's inspection, more especially with No. 8 shoot, No. 3 stope at the bottom of the mine, which is the deepest point yet reached; the lode is large, and has a splendid appearance, producing general work of first-class quality. All that is now wanted to make the mine a great success is deeper drainage, and you may be sure no time will be lost in effecting this object. Other points are looking quite as well as when previously reported on. All works are progressing but slowly, in con-equence of little force.

ALMADA AND TIRITO CONSOLIDATED.—Telegram from Mr. Breach: No profit for June. Progress underground satisfactory.

CEDAR CREEK.—T. B. Ludlum, July 8: I last wrote you on June 28. We cleaned up in the Baker claim on the 1st instant, realising $4567·20, and at an expense of $3105 66. We used water equal to 6½ days of 24 hours each, the product being an average of $721·19 for each full days water included in the expenses is the principal cost of running powder drifts for the blasts which we are now preparing amounting to $800 The above result is very encouraging, being an improvement in the richness of the gravel, although the fact that owing to the unevenness of the surface of the bedrock we were unable to coast off all the gravel with our pipes, but were obliged to leave from 3 to 30 in. in depth over the whole area, which we must work up with pick and shovel after we have finished washing for the season. Thus far we have only run water two days this month, being engaged as follows:—2nd and 3rd cleaning and fitting up, 4th national holiday no work, 5th and 6th washed, 7th commenced preparing for blast in rear of the shaft, cutting hitches and constructing staging in the shaft about 20 ft. below the surface of the bedrock so as to cover the shaft to prevent its plugging and raising an incline through the bedrock from below the staging in that part of the shaft to the surface of the bedrock some 60 ft. to the front, so as to wash and uncover the shaft; 8th instant, to day being the Sabbath there is no work being done. I expect to explode the blast on Tuesday next, provi led we can complete the work of preparation. The chambers for the powder will be in the rear and on both sides of the shaft. The bank is 80 ft. in depth at the shaft, and about 100 ft. in depth 80 ft. further back, where the bulk of the powder is to be placed, I intend to use 12,000 lbs. of "Judson" powder deposited in seven chambers. I believe this blast will extend our pit back to the soft gravel, and over the line of greatest depression in the ancient channel. In the Star and Union we are busily engaged cleaning bed rock. I will forward mine statements in a few days.

SAN PEDRO.—W. Phillips, June 15: The cross-cut driving towards the manto in the 165 is in 19 metres from the shaft. In consequence of the large quantity of coming water during the last few days we have not been able to work to advantage; coming water 5000 gallons daily. The men can, however, now drive much faster, as the cross-cut is in past the crevice from which the rush of water came, so that the stream comes now from the side, and the end is in larger and softer ground—a white granite mixed with pretty fresh stones of bright yellow bronze, in my opinion very good indications of meeting with a good bunch of ore when we get into the manto, which, according to the distance of the manto from the shaft in the 150 will be in about 4 metres more; this I expect we shall be able to drive this month if the ground continues at present. The winze in the manto in the 150 is now down 10 metres; no change since last report, still yielding good stones of yellow bronce, but as yet not sufficient to value. This winze is being sunk near the wall of the manto nearest the shaft, so as to make communication with the cross cut in the 165 as soon as we get into manto, so as to give the men good air for opening out in the manto; therefore, we cannot expect this winze to be as productive as one sunk in the heart of the manto. The cross-cut driving towards the manto Verde unchanged since last report; ground still hard for driving. The stope in the back of the 135 level will still produce 2 tons of 17 per cent. metal per fathom. The tribute pitches in the 88 and 47 are producing a small quantity of rich ore, which leaves a small profit to the mine and to the tributers.—Old Works: The stope by the side of old works a few metres below surface is much the same as when last reported, producing 2¼ tons of 20 per cent. ore per fathom. This stope being narrow, we can only put three men to work at a time, who take out about 1¼ ton daily. The tribute pitch in the manto Verde is producing small quantities of ore, which leave a small profit to the mine. Everything at surface and underground is working satisfactorily.

TOLIMA.—Frias: The May accounts and cost sheet not having come forward by this mail, partially owing to the stress of work imposed by the stock taking and close of the books incidental to the termination of the financial year, the publication of the result of the month's work is necessarily postponed. In a letter of a week's later date than that embodying the underground agent's report, and dispatched by the company's manager by special messenger to overtake the mail, the following very satisfactory intelligence is communicated:—"During the last few days we have had decided improvements in the silver mine at Frias, several of our stations having opened into good-looking mineral since the powder arrived, and now that we have obtained a pretty good staff of miners I think we shall be able to begin making much better returns from this month forward."

CONDES OF CHILI.—James Seccombe, June 16: During the past fortnight the weather has been tolerably favourable, and the operations progressing satisfactorily. I am now perfectly satisfied that the greater portion of the ores can be jigged advantageously; I have, therefore, selected a convenient place at the foot of the mountain for that purpose. When I can get a system of Andarivels completed the ores will all be sent to this place from the mines at a very small cost. As I have before pointed out things cannot be accomplished in this district with the same dispatch as in England, but gradually; as everything is got into more complete working order so will the proportionate cost be reduced, and profit increased. There is an abundance of ores in the mines, all of which can and will be returned at a good profit. On May 30 there were 30 tons of dressed and 170 tons of undressed ores on the floors, and about 100 tons broken in the mine. At that date there were 30 natives and 10 English miners, and I expect a further increase by the next return.

I. X. L. (Gold and Silver).—Lewis Chalmers, July 19: I enclose foreman's report. The 4th of July celebration caused us the loss of a few shifts, otherwise we are making fair progress. The lode in the face of the 200 is 5 ft. wide, in orey material.—Foreman's Report: I have to report as follows:—The engine-shaft is making fair progress, is now down 57 ft. from the 200 station in hard rock, but blasts well; 9 ft. sunk this week. The north drift 200 ft. level started on the morning of the 3rd is now in 553 ft. from the cross-cut in the 200 ft. level; 8 ft. driven this week. The said drift is in ledge matter, ore and porphyry, 5 ft. thick, now running 25° west of north, pitching 60°; ledge or vein has well-defined wal's, by all indication is likely to strike a body of paying ore at no distant day: 30 ft. of raise timbered this week near adit, which a few days will finish. From 200 up to adit is 190 ft., raise incline 102 to cross-cut from O K. shaft; all now connected. Plenty of good air in the mine throughout, everything in and about it running and working well.

UNITED MEXICAN.—E. Hay, June 23: Adit of San Cayetano and Mines of San Antonio de la Ovejera, San Cayetano de la Ovejera, El Diamante, &c. A buscon has found a narrow seam of ore in El Diamante, from which he has extracted 15 arrobas of ore (an arroba is 25 lbs.), the half value of which amounted to $6·23. We have driven in the end of Los Angeles on June 16 2½ metres, and on the 23rd ¾ metre, the rock being very hard, and much water coming away from the end. As we are advancing due west we have to drive 55 metres to arrive abreast of the shaft of San Cayetano, and the end will then pass at about 80 metres to the south of the shaft. The water has considerably increased in Los Angeles since we have cut a lode running nearly parallel with this working; it inclines a little to the south, so that we traverse it diagonally, and we shall soon know if it is advisable to undertake some work on that lode. I believe the cuerpo (lode) of San Cayetano must be to the north of this working, and when we get nearer the shaft it may be useful to explore the ground by a cross cut. In San Benito we have driven in the two weeks to June 23 3·33 metres, total distance 28 58 metres. The water in the shaft had gone down on June 16 0·45 metres, making a total of 1·90 metres. Though it decreased a good deal during the beginning of the week the heavy rains we have had lately have brought up the level to where it was formerly. In the Incate of San Ignacio we have driven in the two weeks ending June 23 4 metres, total 9·45 metres. In the pozo to the south, east of the old workings, the water had gone down on June 16 0·10 metre, total 2 05 metres. For reasons given no decrease has taken place this week. From San Antonio de Abajo they have only sent a small lot of cargo 10·3 arrobas, the half value of which amounted to $6·22. Yesterday Mr. Rocha, the engineer, marked the place where the cross-cut to the south is to be began to connect the shaft of San Agastin with the continuation of the adit of San Ignacio.

HUNTER CONSOLIDATED.—G. P. Armstrong, July 5: No special change has taken place in the affairs of the company, everything in and about the mines in the way of development and improvement is being pushed as vigorously and energetically as circumstances will permit.—Crown Point Mine: We are now working 17 men and two horses on this mine, divided in two shifts. Have been laying some track and timbering some drifts during the last few days, which caused some delay, and retarded to some extent the development of the mine. Mines last report a winze has been started about 200 ft. from the mouth of the tunnel, and is now 12 ft. deep, carrying a vein of average ore from 12 to 18 in. in width. Should the ore body in this winze continue it might be advisable to make it the main working shaft of the mine. The ground works well, and the vein is very well defined, with porphyry footwall and lime hanging-wall.—Main Tunnel: The drift south from the bottom of the main shaft is now in 25 ft., and will, perhaps, have to be run 20 ft. more before reaching the body of ore on the level above, known as the Cave. The main tunnel is now in some 45 ft.; this mine will soon be in condition for stoping.—Vulcan Mine: Machinery for new hoisting work now on the ground, also most of the lumber for the main building. I think in 10 or 12 days more we will be hoisting ore from the Vulcan. The only work being done at present on this mine is in the main tunnel, which now measures 70 ft. from the main shaft. You may expect to hear a good account from this mine when we are fairly at work; only four men engaged at present in two shifts.—Look-Out Mine: We expect to make connection with the old shaft in three or four days; ground has been very hard, but better progress is now being made.—Buckeye Mine: No change of importance, still sinking shaft; vein looks more favourable for striking large body of ore; stringers and small deposits of very good ore are encountered at intervals. The ground is quite soft, but stands well, and are working four men in two shifts; shaft now 55 ft. deep.—Water Pipe: Have laid 6000 ft., and go on with the work again to-morrow, as more of the pipe has arrived from Toano.

MALABAR.—G. B. O'Reilly, June 19: Since starting our present run, on the 27th ult., we have to date washed 438 hours, thus averaging 19 hours out of 24. During this period we have lost two entire days moving the monitors and 10 hours through heavy rain and a small slide of rock on ditch. We intend to conclude the run on or about the 25th inst., and will then clean up, thus getting in a full run of over 500 hours in the month. This we have been able to effect owing to our having increased our force of peons, and, at the same time, we have rather less rock and pipeclay than during previous runs. I reckon we shall have run off during this period 70,000 cubic yards of ground, if not more. The gravel continues to look about the same. No sudden change can really take place, as, although we got through such a vast quantity of ground, it must be remembered that we have an extent of face of over 600 ft., with a bank 100 ft. high. With our present almost continuous work, our force has been taxed to its utmost, and, in order to continue, we shall certainly have to augment our native labour. Until seeing the result of our approaching clean up, I shall defer entering into any details as to what we propose to do in the matter of expenditure and future management.

BENSBERG.—C. Craze, July 30: The lode in this shaft continues to look well, and is producing fine rocks of lead ore, which have all the appearance of the top of a large bunch. In the 22, west of shaft, we have met with what at first appeared like the north wall of the lode, and which is letting out water freely, but in cutting through it we find there is more lode still before us, which produces about the same quality of stuff for lead and blende as for some time past. There is no change in the 22 east since my last, the lode producing about 1½ ton of blende per fm., with some lead. In the 14 driving east we have commenced to gain a little north, as it was in this direction we have some good lead ore in the bottom of the opencast, and if we can meet with the same valuable part in this level it will give us a good piece of stoping ground for about 6 fms. in height. We have lately commenced to drive west of cross-cut (at the 14 east), towards Victoria shaft, on a north part of the lode; this has been done by the men who drive the bottom levels when they have been hindered from working in their own places with the water, and I am pleased to say this part is now producing fully 1 ton of good lead ore per fathom, with a very promising appearance, especially in the bottom of the level; this speaks well for our 22 east, which is about 13 fathoms short of this point. No further change in the mine.

BRITTANY MINERALS.—J. Edwards, July 28: The lode in the engine-shaft sinking below the 70 is 3 ft. wide, and worth from 25*l.* to 30*l.* per fathom for silver-lead ore; the ground sunk during the past week 2 ft. The lode in the 70 fm. level end, driving south from the engine-shaft, has further improved since last report, now worth fully 30*l.* per fathom for lead ore. I expect we shall meet with this shoot of lead ore in the engine-shaft after 3 or 4 fathoms more sinking; ground driven during the past week 6 ft. The lodes in Nos. 1 and 2 stopes, in the back of the 70, south of engine-shaft, are worth respectively 8*l.* and 18*l.* per fathom for silver-lead ore. We hauled a splendid pile of ore last night from the 70 end and stope. All the machinery is in good condition and working well.—[Ore raised since last report 15 tons.]

For remainder of Foreign Mines, see to day's Journal.]

AUSTRALIAN MINES.

BURRA BURRA.—Captain Sanders, June 12: During the last four weeks Morphett's engine-shaft has been sunk about 11 feet, now 8 fms. below the 85; the ground has eased very much, and expect to make rapid progress to the 100 fm. level. The 85 south, on Sanders's lode, is still producing saving work for the stamps. We have cross-cut to the footwall, and find the lode about 10 ft. wide, but the footwall part is poor. The best part of the lode is against the hanging wall, on which we are now driving. The 85 north, on Kingston's lode, we have crosscut east about 6 feet and west 8 feet, and no footwall yet; this shows the lode 18 ft. wide. In the west cross-cut we have intersected a branch of rich ore, specimens of which are forwarded. This is like the ore seen nearer the shaft. As far as seen it only reaches to the roof of the level, but in the bottom it is from 15 to 18 inches wide. We are now stripping down the lode back towards the shaft as faf as the ore continues. Shall then resume driving north on the orey part of the lode. The 70 fm. level cross-cut is suspended, not being safe to continue further, as the water was increasing. The 70, north of Waterhouse's, is still producing stones of ore—a very promising lode, but hard. This level will be suspended for awhile, so as to concentrate our workings on the most productive and promising points. At the 60, driving north of Peacock's air shaft, the lode is still looking well and slightly improving, but spare for driving. Open and surface works are going on just as usual.

PORT PHILLIP AND COLONIAL (Gold).—We have received the following advices dated Clunes, June 9 last: Quantity of quartz crushed on the company's and tributors' account for the four weeks ending May 25, 5137 tons; total gold obtained 2103 ozs. 14 dwts.; receipts (including 210*l.* 9s. 9d. obtained from tributors), 4532*l.* 6s. 2d.; payments (including 352*l.* paid for firewood and mine timber), 2587*l.* 10s. 2d.; profit, 1944*l.* 16s., which, added to previous balance of 1615*l.* 1s. 11d., made an available balance of 3559*l.* 17s. 11d. The amount divided between the two companies was 1800*l.*, the Port Phillip Company's proportion of which is 1170*l.* The balance (1759*l.* 17s. 11d.) was carried forward to the next month's account.

— July 27: Month ending July 17. Telegram: "Gold obtained from the company's quartz, 530 ozs. Gold obtained from tributors' quartz, 1356 ozs. Profit, 1486*l.* Remittance, 1150*l.*"

SCOTTISH AUSTRALIAN.—The directors have advices from Sydney, dated June 9, with reports from the Lambton Colliery to the 8th of that month. The sales of coal for the month of May amounted to 15,040 tons.

YORKE PENINSULA.—The directors have advices from the committee of inspection at Adelaide, with reports from the Kurilla Mine to June 11:—The following are extracts from Capt. Anthony's report: Kurilla Lode: In the 45, east of Hall's shaft, the lode held its own, as per my report of May 11, or 4 tons of 20 per cent. ore per fathom, until the 9th inst., when on taking it down the orey part of it was found to have diminished in size. I regard the falling off as of a very temporary character, and the more especially as the spot is surrounded with ore on all sides. • • • In the 45, west of Hall's shaft, I have driven in all 12 fathoms; the lode will average about 3 ft. in width. The south wall is well defined, and, on the whole, it is a decided improvement on the same line as seen in the 25 fathom level. The 35 is not driven west at all. At the present rate of driving I shall get this drive under the ore gone down under Deeble's shaft in the 25 in three months, when we shall doubtless find ore. In sinking the hauling shaft below the 35 the ore which should have been found a few feet below the 35 was not met with at the end of 5 fms. sinking; I drove north at this point and found the lode to be fully 12 ft. wide, with 1 ft. 6 in. of solid yellow ore on the north wall, and equal to a yield of 4 tons of 20 per cent. ore per fathom. It now promises to make a great deal of ore as deepening operations are carried on. • • • On this lode twelve tributers are working, at an average of 8s. in 1*l.*—Morphett's Lode: The lode in the engine-shaft has not been taken down since my last monthly report, dated May 14, then 2¼ ft. of 18 per cent. ore per fathom, with a large portion of the outh part making good average, or (say) in all 8 to 9 tons of 18 per cen t. ore per fathom. This shaft is certainly laying open a good mine, requiring only to be fully developed to make good profits. The lode in the 20 east has been very much disordered, but it is now resuming its former course, and opening average tribute ground. The lode in 20 west is pinched, and is not opening workable ground, although there is a vein of rich ore 4 in. wide. • • • Four tributers are working the back of the 20 east at 6s. 6d. in 1*l.*—Ore Returns: Dressed and ready for sampling, 20 tons of 19 per cent., or (say) 1800*l.*; undressed (say), 50 tons of 15 per cent., equal to 350*l.*; dredge ore at 5 per cent., (say) 340 tons, or 680*l.*; total value of ore on hand, (say) 2830*l.* net. • • • With the exception of the pinched lode at the 45, east of Hall's shaft, and this I hope is of a very temporary character, I have never seen the mine look better in its leading and advanced points, and especially at Morphett's is the lode holding out such good indications for deep mining that this lode will by-and-bye make a mine of itself. The price of copper is certainly very depressing, and yet this is the proper time to develope the mine, so as to have reserves of ore to break and sell when a high price is obtainable. Our ore averaging as it does about 17 per cent., 6*l.* per ton on copper will make a difference of about 12 per cent. on our gross returns.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

CAMPANIL IRON ORE COMPANY (Limited).—Capital 12,000*l.*, in 50*l.* shares. To acquire the interest of Don Jose Martinez de las Rivas in a certain agreement relating to the working of certain shares of the San Miguel and Nuestra Sa de Begona Iron Mines. The subscribers (who take four shares each) are—M. Curtis, Thornfield, Heaton Mersey, Lancashire, merchant; J. Martinez de Las Rivas, Estancion, Bilbao, Spain, merchant; John Curtis, Heaton Chapel, merchant; J. Higson, Howard House, Stockport, mining engineer; R. Curtis, Limhurst, Dunham Massey, Cheshire, merchant; W. Davis, Bridgend, Glamorgan, colliery proprietor; George Richardson, 26, Sunderland-terrace, Westbourne Park. The subscribers will be directors, the qualification being the holding of four shares.

LONDON BATHS AND GYMNASIUM COMPANY (Limited).—Capital 10,000*l.*, in 1*l.* shares. To establish baths and a gymnasium. The subscribers are—W. W. Lane, 20, Grove-road, Brixton, 100; S. Morrison, 1, Albert-square, 20; S. Foster, 9, Barrington-road; W. R. Howard, 22, Chancery lane, 20; S. H. Roberts, 20; H. T. Foster, 27, James-street; J. C. Carter, Westbourne Park, 1.

LEICESTER COFFEE AND COCOA HOUSE COMPANY (Limited).—Capital 10,000*l.*, in 1*l.* shares. To establish temperance refreshment houses in Leicester. The subscribers, all of that town, are—J. H. Williams, 25; G. H. Ellis, 50; John Gritton Lee, 20; C. H. Marriott, 50; W. H. Walker, 50; W. Stanyon, 100; J. Grimson, 50.

COPPER MINERS TIN-PLATE COMPANY (Limited).—Capital 84,000*l.*, in 50*l.* shares. To acquire tin-plate works and certain lands at Cwm Avon, Glamorgan, lately in the possession of the Governor and Company of the Copper Miners in England, and to manufacture tin and terne plates, &c. The subscribers (who take one share each) are—Henry Nash, Tower Buildings, Liverpool, merchant; E. Smith, Tower Buildings, Liverpool; James Whatman, 6, Carlton Gardens, W., no occupation; P. W. Flower, Briton Ferry; R. V. Leach, Devizes Castle, Devizes, gentleman; F. D. Wickham, South Parade, Bath, no occupation; W. A. Bartlett, 19, Brittannia-terrace, Great Yarmouth, no occupation. The directors are not yet appointed.

NORTON CANNOCK COAL COMPANY (Limited).—Capital 50,000*l.*, in 10*l.* shares. To acquire coal mines in the parish of Bloxwich, Essington, and Cannock, in the county of Stafford, and to take over, by arrangement with the liquidator, the property and business of the Norton-Cannock Colliery Company (Limited), subject to the incumbrances and liabilities. The subscribers (who take one share each) are—C. J. Clay, Statenhill House, Burton-on Trent, brewer; R. Chamberlain, 203, Henly-road, Edgbaston, retired brass founder; W. Canning, Burton-on-Trent, engineer; D. Peacock, Horsely Tipton, mining engineer; F. W. Peacock, Church-lane, Tipton, mining engineer; Robert Ratcliff, Burton, brewer; John Townsend, Hornington, Burton. The directors are—Messrs. C. J. Clay, Richard Chamberlain, R. Ratcliff, W. Canning, A. E. Wenham, Joseph Moore, W. H. Moore, and Charles Couchman.

LLOYD'S BANKING COMPANY (Limited) may appoint directors equal in number to half of the directors appointed by the shareholders. The qualification for the directors nominated by the shareholders is the holding of shares to the value of 500*l.*

THE PACIFIC BANK (Limited).—Capital 1,000,000*l.*, in 10*l.* shares. To take over the business of the London Bank of Mexico and South America (Limited). The subscribers (who take one share each) are—William MacAndrew, 29, Pembridge-square; F. Harrison, 181, Maida Vale; Joaquim de Mancha, 116, Gresham House; John B. Ball, 1, Gresham Buildings; E. S. Jones, 34, Kildare terrace, Bayswater; P. Morrison, 96, Leadenhall-street; W. Busby, 39, Throgmorton-street; F. H. Bailey, 24, Spencer-road, Putney; Edwin Beer, 18, Great Winchester-street Buildings.

AMERICAN AND CONTINENTAL AGENCY (Limited).—Capital 30,000*l.*, in 5*l.* shares. To act as agents for the purchase or sale of goods. The subscribers are—William Crompton, 38, Belgrave road, 200; C. Fretwell, 22, Ironmonger-lane, 160; T. J. Briggs, Laura-place, Clapton, 20; B. Lewis, St. Michael's House, E.C., 1; D. Irvin, Preston, 10; John Irum, Birkdale; G. B. Dalby, Preston, 5.

BLAKELEY HALL COLLIERY COMPANY (Limited).—Capital 60,000*l.*, in 100*l.* shares. To work for beds of coal, ironstone, clay, &c., in the counties of Stafford and Worcester. The first seven subscribers are—T. D. Barnes, Colmore row, Birmingham, banker, 25; J. Cartland, The Priory, King's Heath, Worcester, 30; R. H. Clive, Salford House, Gravelly Hill, near Birmingham, merchant, 20; H. Heaton, Harborne House, Harborne, gentleman, 20; W. R. Hedges, 12, Dale-street, Birmingham, chemist, 20; D. Peacock, Horseley, Tipton, mine agent, 25; W. Rollason, Gravelly Hill, Birmingham, 80. The directors are—Messrs. H. Heaton, D. Peacock, W. W. Rindell, A. Rollason, and Thomas Rollason, the qualification being the holding of 20 shares.

LONDON BANK OF OREGON (Limited).—Capital 400,000*l.*, in 10*l.* shares. To carry on business as bankers in Oregon and elsewhere. The subscribers are—H. G. Ashhurst, 9, Fenchurch-street, 50; N. Ten Bosch, 28, Brunswick-street, Liverpool, 50; E. Coventry, Corn Exchange, E.C., 50; J. O. Wallace, Custom House; W. S. Nathan, 21, Great Winchester-street; John Baker, 108, Leadenhall-street; E. Russell, Anderton's Hotel.

LONDON BANK OF UTAH (Limited).—Capital 160,000*l.*, in 8*l.* shares. To carry on a banking business in Utah and elsewhere. The subscribers (who take one share each) are—R. T. Blennerhassett, M.P. for Kerry; A. Tyndall, Aylesbury; J. H. Secker, 8, South Eaton-place, S.W.; W. Tebb, 7, Albert road, Regent's Park; A. Godbe, Salt Lake City, and Pembroke Villas, W.; W. Armstrong, 5, Great Winchester-street; Robert Daire, 5, Great Winchester-street.

RALPH WALLER AND COMPANY (Limited).—Capital 75,000*l.*, in 10*l.* shares. To acquire the businesses carried on at Manchester under the style of Ralph Waller and Co., Grocott and Co., and the Etherow Mill Company. The subscribers (who take one share each) are—R. R. Waller, Dale street, Manchester; R. D. Waller, Groombridge House, Withington; John Holland, 232, Brunswick-street, Manchester; J. Cheadle, Hope-terrace, Newton Heath, Manchester; John Thornley, Mile-street, Openshaw; R. Dolbey, Eccles-road, Manchester; W. R. Ridge, 188, Upper Brook-street, Chorlton-on-Medlock.

LONDON OILWORKS COMPANY (Limited).—Capital 8000*l.*, in 10*l.* shares. To acquire the business of the Seed and Nut Oilworks Company (Limited).

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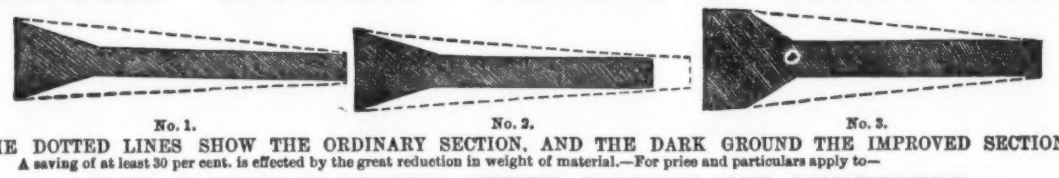


No. 1. No. 2. No. 3.

THE DOTTED LINES SHOW THE ORDINARY SECTION, AND THE DARK GROUND THE IMPROVED SECTIONS.—A saving of at least 30 per cent. is effected by the great reduction in weight of material.—For price and particulars apply to—

JOEL EATON WALKER, STEEL MERCHANT, SHEFFIELD.

NOTICE.—These Sections are Registered.

WRIGHT'S ENDLESS IMPACT BOILER.

Fig. 1.

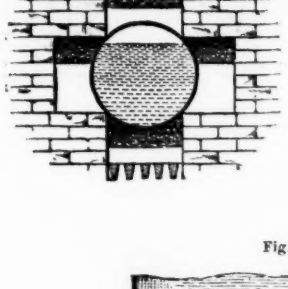


Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

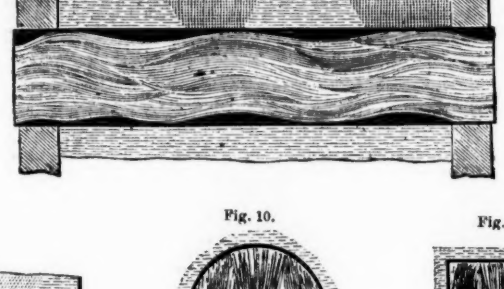


Fig. 7.

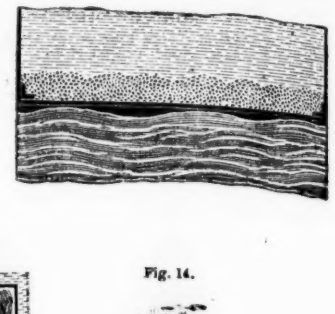


Fig. 8.

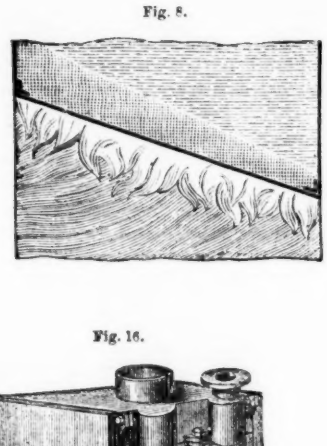


Fig. 9.

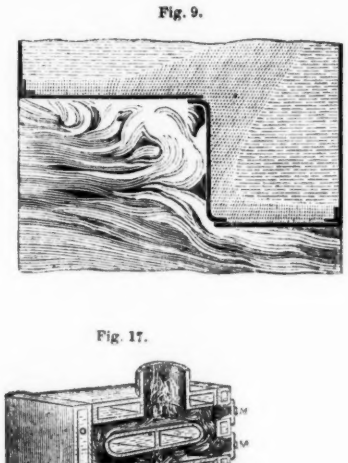


Fig. 10.

Fig. 11.

Fig. 12.

Fig. 13.

Fig. 14.

Fig. 16.

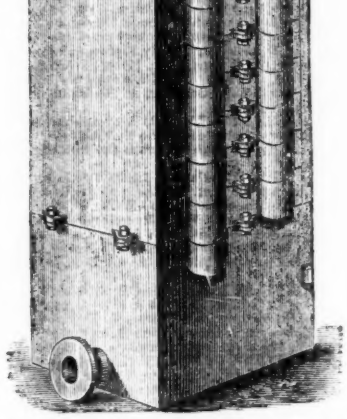


Fig. 17.

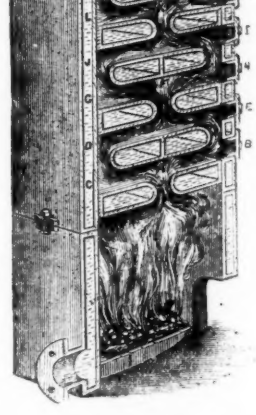


Fig. 15.

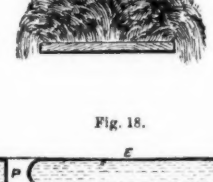


Fig. 18.

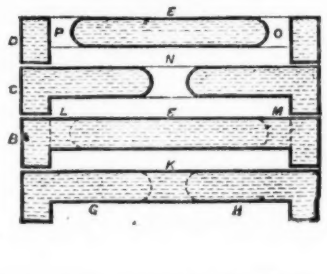


Fig. 19.

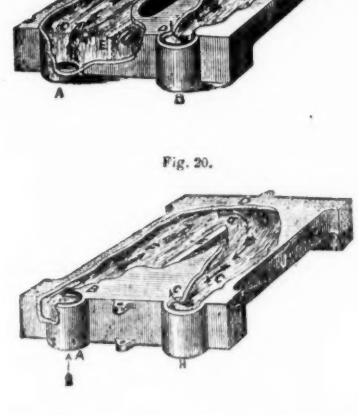


Fig. 20.

WRIGHT'S ENDLESS IMPACT BOILER.

The fundametal principles which have guided Messrs. William Wright and Co., of Airdrie, N.B., in the construction of their Endless Impact Boilers, which we now propose to describe, cannot be better understood than by first considering some of the facts that ought to be borne in mind in the design of hot-water boilers. The great difference existing between the latter and steam-boilers in general is that whereas the first is only required to raise the temperature of cold water to the required degree without any regard to the generation of steam, the latter must be constructed to work in both these respects. It is well known that water possesses very little elasticity, its expansive force being almost inappreciable under ordinary circumstances, while the effect on a steam-boiler is quite different, owing to the sudden and violent force produced by the expansive power of steam which at very high temperatures is immense. For this reason the shape of our steam-boilers is very much controlled by exigencies of strength, and as the cylindrical form is next to the spherical in point of strength, and superior to it in respect of superficial area or heating surface, so we find it the one generally adopted in steam-boilers. Yet it is not difficult to perceive that heat acting on the outside of a cylinder, as it has to do on every side of a common steam-boiler, is attended with large and continued waste, for surrounded on every side as these boilers are by brick flues, whose outer surfaces are frequently exposed without attempt at protection from the outer air, powerful conducting forces are so set into operation, with the result that whilst one part of the heated products is sent round and round the boiler to act on surfaces whose conformation does everything to render its action nugatory and valueless, the remainder of the caloric generated is conducted by a thousand channels through the brickwork into the atmosphere. There is a very general belief that brick flues and setting draw the heat out of the ascending products that stream over them, and reflect it or return it to the boiler, and so save the escaping heat for its necessary purpose, and prevents its going up the flue; so strong is this opinion that it has, so to speak, become a settled opinion of our faith that the thicker we can pile bricks around our boilers, and increase the size and extent of our flueage about the same to secure the deposition and accretion of heat where wanted, and prevents its flow into the atmosphere, the more did our conduct in doing so appear praiseworthy, and in strict accordance with plain facts and well-known scientific results. We do not make this statement for the sake of controverting it, as it is incontrovertable, but what we desire to point out is to give proper prominence to a collateral fact with which it is indissolubly connected. We refer to the fact that the conduction and radiation increased with the increase of surface area, so that when we add course to course and pile to pile of bricks around our boilers to keep in the heat we are at one and the same time increasing the outside area, by which means a largely increased surface is offered for the loss by conduction and radiation into the atmosphere. To exemplify our meaning by figures, suppose a boiler 2 ft. square, which gives 24 square feet as the corresponding radiating and conducting surface; now, if we put 3 ft. of flueage and brick around this the conducting surface will at once attain the remarkable total of 384 ft. It must be recollected, too, that radiation and conduction are neither weak forces, nor are they only occasional or intermittent in action; but, on the contrary, they are powers of ceaseless and resistless energy. Our preceding remarks will be the more exemplified on referring to our Fig. 1—5, where the usual outside flues of our cylindrical boilers are represented it will be seen that the brickwork receives by far the greater amount of heating surface, whilst the boiler shell receives comparatively little, and, therefore, it is not to be wondered at that the process of steam raising is one of the most wasteful and extravagant in the whole economy of production.

We have said before that exigencies of strength to a large extent control the shape of steam-boilers, and great strength is so indispensably necessary that there appears little hope of any alteration or much improvement in steam-boilers from their cylindrical shape as at present. However, where the cylindrical shape is adhered to, outside flues are indispensable, as they are the only way by which heat can be applied to such steam-boilers. The foregoing remarks amply prove that external brick flues involve a great loss of heat, and this being so the questions may very properly be asked whether this defect may not be obviated in the construction of hot water boilers, and whether instead of presenting not a single really effective surface to the flame, as is the case in cylindrical steam-boilers, we cannot design our hot water boilers so as to effectually put a stop to the loss of our costly manufactured heat? To both these questions satisfactory affirmative replies may be given, for although the paramount demands of strength in the construction of steam-boilers have more and more driven makers into the long cylindrical shape, in hot-water boilers the great strength necessary to resist steam, frequently high pressure, is quite unnecessary when the whole pressure to be provided against is simply that of the water in the boiler and pipes. It is, as we shall presently show, more concisely a mistake to make use of cylindrical-shaped boilers, presenting, as they do, the worst possible surface for the economical action of the heat thereon, where all that is required is a hot-water boiler. To further elucidate the wasteful action of horizontal flues and flame action in steam-boilers we append Figs. 6 to 9. An illustration of the action of flame in a tube, showing the unequal conversion of steam, and the loss therefrom by the flame acting on one-half of the tube surface only, is represented by Fig. 6, whilst Fig. 6 gives an illustration of the flame sliding along the plate, thus raising steam very slowly, because there is no impact or time allowed for the flame to drive its heat through the plate. In locomotive fire-boxes it is found that the top surfaces are by far the most powerful, the vertical sides, as is obvious by their position, much inferior for heating and steam raising purposes, and the effect is illustrated in our Figs. 8 and 9. In the first of these we have the action of the flame against an angular surface, showing that by the impact of the flame the water immediately on the plate is converted into steam rapidly; but Fig. 9 represents the generation of steam most rapidly, because the blows from the impact of flame against a plate at right angles to the line of progression drives the heat through the plate without cessation. Having so far pointed out those heating surfaces which we may class as being wasteful, and noted which are most effectual surfaces in locomotive engines, by the aid of the latter we may now refer to the best and most economical surfaces for hot-water boilers, and these we represent in Figs. 10 to 13. Surfaces such as these receive the powerful impact of the flame, whilst that time is allowed which is indispensable for absorption of heat. In Figs. 14 and 15 we show the little disturbance caused by an obstruction in line with the stream, whilst in Fig. 15 the powerful effect is shown which is produced when the obstruction is at right angles and across its path; precisely the same effect as in Fig. 14 is caused when the heated products are sent along plates or surfaces in line with themselves; therefore, if we wish to secure the utmost effect from the flame stream we must place our surfaces right in its face in the same way.

We may now proceed to the description of the hot-water boiler we have selected for illustration, and may then appropriately point to the manner in which all the forementioned essential conditions have been carried out in this boiler. In our Fig. 1, we give an outside view of the same in our Fig. 1, whilst Fig. 2 shows a mid-section in perspective. This boiler is completely built up of cast-iron sections, the connecting of which is effected by means of india-rubber rings lying in recesses purposely formed for them around the mouth of each opening. These sections, as will be seen on referring to Fig. 18, are closed in at the back and front, both sides, top and bottom with only the necessary flame opening through each. The first section (Fig. 17) has the smoke-opening through the centre, the second has the openings at each side. To simplify the castings so as to insure good ones at reasonable prices the sides are cast separate, but the surface are all as shown. These sections are shown better in Figs. 19 and 20; in the former we have a central section with flame opening in centre, A is the cold-water column, B hot-water column. The cold water enters at A, flows down to H and returns hot to D, the short central rib E divides the section into two, except the passage left at H. In Fig. 20 we have another central section, with this difference, however, that the flame openings are at the sides; here A is again cold water column, H hot water column. The cold water enters at A, flows round the central rib E to D, then returns hot to C. Our Fig. 12 shows us the flame action in the interior, and it must be admitted that the flame impact is all that can be desired to ensure the economical heating of the water. The soot-holes are shown at B, E, H, I, M, N. The cold water is fed from the cold column on the outside, and the hot water is carried away into hot column, also shown outside in Fig. 1. All the sections drain to the bottom, where means are provided for running off impurities when necessary.

The chief points of merit in these boilers appear to be that the entire surface is exposed to the direct furnace and flame action; then we find bricks entirely dispensed with in these boilers. We also note that this boiler is entirely water-jacketed, which makes danger from fire almost impossible. We should, moreover, recommend all users of these boilers to run a rough wooden box all round the boiler, excepting the front, where the soot holes are, and to fill it with sand; by this means the temperature of the boiler would be kept more equable, and its exterior guarded from atmospheric influences. It will be seen that we have no outside flues in these boilers, as the whole is surrounded by two thicknesses of metal and several inches of water, and so achieve thorough combustion. Our furnaces must be arranged so that plenty of air may be projected into the furnace. The flues in the ordinary arrangement never allow the flame to rise naturally, but in Messrs. Wright's arrangement the whole of the processes of combustion and the heating of the water are performed in the natural perpendicular rise and flue. The configuration of these improved boilers is noteworthy from the fact of the whole flame passages being directly over the fire, in a sense that no other hot-water boiler can lay claim to, the interior forms as it were one large combustion chamber directly acted upon by the flames. The impact in these improved boilers is almost invariably at right angles, not less than 17 distinct strokes being given to these surfaces by each volume of heated products in their ascent to the stack; the smallest volume of heat that passes through the boiler not only strikes upon one effective surface, but one after the other discharges itself full and square upon the whole 17 surfaces. In conclusion, we understand that Messrs. William Wright and Co. were the only English medallists for hot-water apparatus at the late Philadelphia Exhibition, and reports we have seen lately regarding the practical utility of their hot water boilers in this country speak in very favourable and flattering terms of the efficacy and economy of these boilers.

TRIAL OF A NEW PUMPING ENGINE.—The directors of the Whitelands Twist Company have put down one of the "Manchester" pumping engines, to be used in the extinction of fires, and on Saturday the makers—Messrs. Frank Pearn and Company, of Manchester—conducted a public trial of the engine, at the mill, Whitelands Road, Ashton. Several of the directors, as well as many other gentlemen connected with local manufactories, were present to watch the proceedings. The directors are evidently alive to the importance of being prepared for any emergency that may arise in case of a fire breaking out in the mill, and the "Manchester" pumping engine promises to be an invaluable agent in the extinction of fire, on account of its adaptability to the purpose. The engine is vertical and self-contained, and specially constructed for driving. At one test the engine made 120 strokes per minute, giving out 25,500 gallons per hour, with a water pressure in the pumps of 85 lbs. The 1¼ in. jet was thrown on the top of the chimney, a height of 170 ft., despite the stiff and adverse wind that was blowing at the time. The four ¾-in. jets were tested, and water was thrown considerably over the mill without the least effort to the engine. It was intended to play six ⅝-in. jets on to the mill, but the appliances were not complete. The engine worked steadily throughout the trial, and the results obtained were most satisfactory. We are informed that the pump is double-acting with two rams, each 7 in. diameter; two steam cylinders, each 10 in. diameter; stroke, 14 in. The following table shows the relative pressures and speeds:—

Water pressure in pumps.	No. of revolutions per minute.	No. of jets.	Size of jets.	No. of gallons per hour.
180	88	1	1⅛ in.	18,720
150	100	1	1¼	21,240
100	114	1	1¼	24,240
85	120	4	¾	25,500

— *Ashton Reporter.*

HOLLOWAY'S PILLS.—The slightest indisposition, to prevent its rapidly running from bad to worse, demands immediate attention from the afflicted of all classes. A few doses of these thoroughly purifying and strengthening pills will always be beneficial when the least disorder reigns, or when nervous fears oppress. Two or three pills at bed-time have the happiest effect in promoting perfect digestion, whereby the muscles are rendered more vigorous, the spirits more buoyant and the entire frame more hardy. Holloway's medicine increases the quantity of nutriment derivable from a given quantity of food, whereby the quality of the blood is improved, the tone of every fibre throughout the body is heightened, and the disposition to fall into the disease is reduced to a minimum.

MANUFACTURE OF IRON AND STEEL.

Although the use of salt in connection with the manufacture is by no means new, the modes of applying it are almost innumerable, and in this connection some further improvements have been proposed by Mr. James Barnett, of Healey-street, Kentish Town. His invention relates to the preparation and application of material for the calcining of metalic ores, for the smelting of the same, and for the purification of metals from deleterious matter, for the hardening of cast metals, for the building and preservation of chambers, vessels, furnaces, or other constructions in which metallurgical processes are carried on, to the construction of furnaces with appliances in which metals are wrought, and to the preparation and application of material to be employed as fuel in the various processes to which iron and steel are exposed during the progress of their manufacture. He uses saline matter in such a way as to ensure its complete distribution and perfect permeation throughout whatever matter is to be acted upon. What he means by saline matter is salt in its various forms, either in its most known state or its chemical equivalent: to obtain this equal distribution he preferably dissolves to saturation common, agricultural or bay salt in water. For the purpose of calcining ores he makes a fuel by saturating with the saline solution mentioned any earthy substances, and he prefers the calcining process in the ordinary way. To ignite this fuel a small amount of ordinary fuel must be used to initiate a fire. By the term earthy substances he means any matter whatever that is capable of absorbing water, either in a solid or granulated form.

For the purpose of smelting ores Mr. Barnett proposes to use the artificial fuel prepared as described, either in blast-furnaces, cupolas, or in any furnaces or vessels constructed upon any convenient principle. And he uses either hot or cold blasts, or he projects steam blasts into the fire, or he saturates coal, coke, or other fuel with the solution of salt. For the purification of metals he uses the saline solution; the quantity used must be in accordance with the character of the metal required to be produced. For example, if a soft fibrous puddled bar be required in starting, a bucketful of the solution may be used, the amount being reduced to a quart added at every subsequent heat. He also runs molten slag into the saline solution, and uses the same as fettling, or he crushes puddlers' tap, and saturating the same with the saline solution, melts it down and uses it for fettling; or he fettles with any earthy matter impregnated with salt. Also throughout the several heatings he either saturates with the saline solution, or instead of pouring in the saline solution he throws in at each heat granulated earthy matter impregnated with salt. Also throughout the several heatings he either saturates with the saline solution the ordinary fuel used, or he uses the artificial fuel above described, for which purpose he uses blasts. For the hardening of cast metals he uses a composition of salt, carbon, and oil. And for the protection of fire-chambers and vessels he uses furnace slag, or puddlers' tap crushed and impregnated with salt, or he mixes ashes with granulated salt, or he builds with iron and protects the back with earthy matter saturated with the saline solution.

ELIMINATING PHOSPHORUS FROM IRON.

It has hitherto been very generally considered that in the purification of iron a certain quantity of the phosphorus is practically inseparable, but Mr. J. B. Kunkel, of Catochin, Maryland, appears to have discovered a process not only of removing the phosphorus, but also of producing in a cheap and simple manner iron free from any tendency to "cold shortness" when caused by the presence of phosphorus, and admirably adapted for use in the Bessemer converter. The invention consists in the abstraction of the phosphorus from the iron by means of magnesian compounds in a novel manner and under easily produced conditions, and is applicable alike to the production of iron free from phosphorus direct from the ore, and to the purification of pig-iron.

The *rationale* of the process consists in taking advantage of the great affinity exhibited by phosphurus for magnesia, which affinity seems not to be disturbed by any possible elevation of temperature. When operating upon phosphatic ores he uses instead of the ordinary limestone flux, dolomite, or magnesian limestone, a well-known double carbonate of lime and magnesia. The charges of ore, dolomite, and carbonaceous matter are fed into the ordinary blast-furnace in the usual way, the proportions of ingredients being substantially the same as when ordinary limestone is used as a flux, and governed by like conditions—the relative amounts of oxide of iron, silica, and lime naturally present in the ore. Should the ore be extraordinarily phosphatic it is advisable to increase the charge of dolomite from 10 to 100 per cent. A portion of the dolomite should be introduced through the tuyeres, although this is not essential.

The working of the furnace being under these conditions in no wise different from the ordinary practice, and being well understood by those practising the art, need not further be adverted to. When operating upon metallic iron to eliminate its phosphorus he applies the dolomite either in the cupola or puddling furnace. He charges first into the cupola a quantity of coarsely ground dolomite sufficient to form a layer from 2 to 10 in. deep, and then charges the fuel and pig-iron in proper proportions for melting, so that the iron be melted will pass through the dolomite, whereby it is purified from all estimable amounts of phosphorus. When used in the puddling-furnace he applies the dolomite directly to the charge of pig-iron in quantities varying, according to the amount of phosphorus in the iron, from 10 to 50 per cent. of the weight of the iron, so that in the process of boiling the iron is thoroughly brought into contact with the dolomite. He also fettles or fixes the sides and bottom of the furnace with a mixture of iron ore and dolomite in about the proportions of four of ore to one of dolomite, the mass being speedily bound by the slag, and forming a durable and excellent fix, and one, moreover, which acts chemically upon the molten charge to purify it.

MANUFACTURE OF IRON.—For the production of iron of a steely quality Mr. M. WATSON, of Notting Hill, proposes to bind the iron ore together with fluxing materials, carbonaceous matter, manganese and prussiate of potash, or other ferrocyanide, or in lieu of the latter common salt. These substances are ground together and intimately mixed in a pug mill and damper with water, or with a mucilage such as is used for making artificial fuel, and the compound is then compressed by hydraulic or other suitable pressure into hard compact lumps. By preference he employs the above substances in the following proportions, but he does not bind himself to these, as they may be varied according to the nature of the ore. He takes 100 parts of iron ore calcined or uncalcined, but by preference the former and sufficient chalk or lime to flux it; from 10 to 15 parts of coal or other carbonaceous fuel; from 6 to 10 parts of manganese, either in the form of oxide or any other convenient form, and one-half part prussiate of potash or of some other ferrocyanide; or in lieu of the latter about 8 parts of common salt may be used, but he prefers the ferrocyanide. Instead of making these ingredients cohere by the use of water or mucilage, they may be mixed with a sufficient quantity of pitch or asphalte (free from sulphur) to make them cohere, and then heated so as to render the pitch or asphalte plastic, after which the compound is formed into lumps or bricks by pressure. If the iron ores used require the addition of sand or clay to fix them, a sufficient quantity of these substances is added to the ore ingredients before incorporating them. The blocks prepared as above described are then smelted in a blast-furnace, sufficient fuel being interstratified therewith in the manner usually adopted for smelting iron ores. For the manufacture of steel he prepares the ingredients for the said lumps or blocks in about the proportions:—100 parts of calcined iron ore, 30 parts of lime, 10 parts of charcoal, 10 parts of manganese, and one part of ferrocyanide. The blocks are by preference smelted in the blast-furnace with purified coke, and the molten metal is conveyed direct from the furnace to a Bessemer converter and treated in the usual manner, and if the proper proportions, such as are above set forth, are used when making the blocks, hardly any, if any, spiegeleisen will be required in the converter.

BLAKE'S PATENT STEAM PUMP.

MORE THAN 10,000 IN USE.

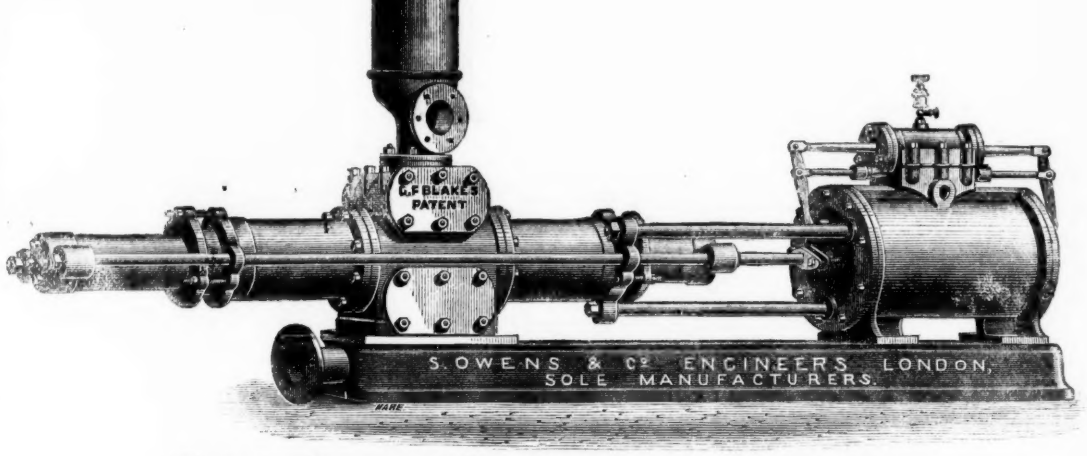
SOLE MAKERS FOR GREAT BRITAIN,

S. OWENS & CO.,

Hydraulic and General Engineers, Whitefriars-street, London;

Agent in Scotland: W. Hume, 195, Buchanan-street, Glasgow.

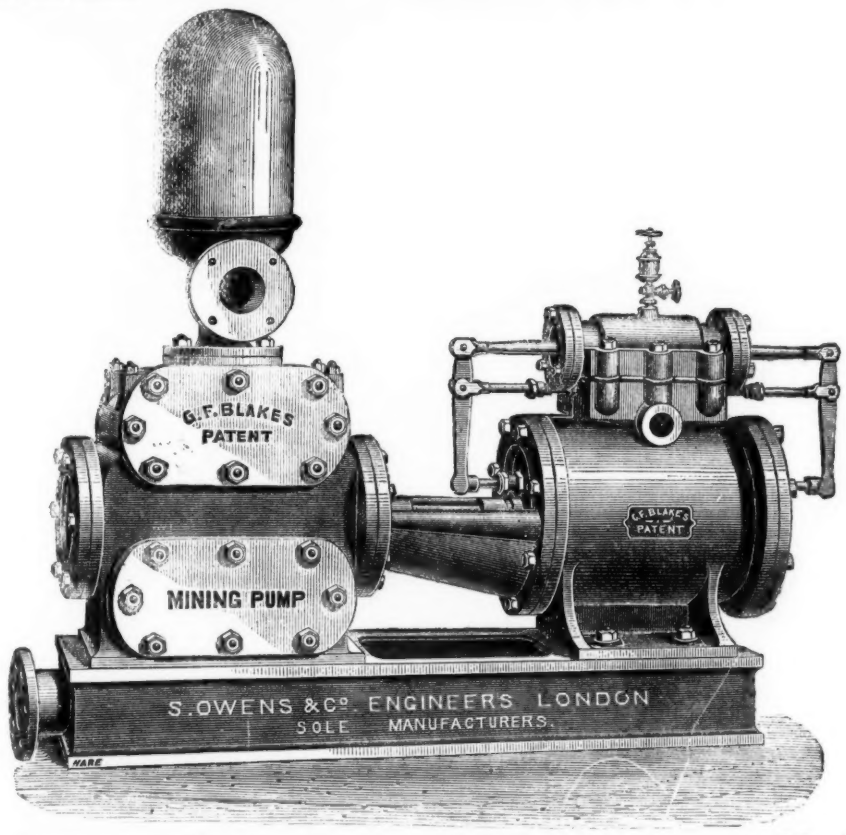
These PUMPS from their SIMPLICITY, RELIABILITY, DURABILITY, and ECONOMY are SPECIALLY SUITED FOR MINING PURPOSES, where large quantities of water require to be raised from great or medium depths with CERTAINTY. They are double-action in their construction, throwing a constant stream of water, can be made of any stroke to suit the space in which they have to work, can be arranged with any combination of steam and water cylinders to suit the pressure and lift against which it is desired to work them, are made of the very best materials and highest class of workmanship, and all working parts can be readily got at by any ordinary workman, and replaced if necessary by a duplicate part (all such being interchangeable) in the shortest possible time. For situations where gritty and sandy water has to be pumped the DOUBLE-PLUNGER PATTERN is recommended. Where space is limited the PISTON PUMP is better suited, a novel feature of which is the PATENT REMOVEABLE LINING, which can be removed in a few minutes and substituted with a new one, without disturbing any other part of the pump.



Blake's Improved Double-plunger Steam Pump.

S. OWENS AND CO.,

In placing the BLAKE STEAM PUMP before the mining world, believe they are offering the BEST, MOST RELIABLE, and ECONOMICAL PUMP that has yet been made, and solicit an inspection of various sizes in operation at their works, Whitefriars-street, Fleet-street, London.



Blake's Improved Mining Pump, with Patent Removeable Lining to Pump Cylinder,

Any combination of these Pumps may be had to suit circumstances. The following are some of the SIZES SUITABLE FOR MINING PURPOSES:—

Dia. of steam cylinders.. In.	12	12	12	12	14	14	14	16	16	16	16	18	18	18	18	20	20	20	20	24	24
Dia. of water cylinders.. In.	3	4	5	6	4	5	6	4	5	6	8	4	5	6	8	5	7	8	9	6	8
Length of stroke ... ... In.	18	18	18	24	24	24	24	24	24	24	24	24	30	30	30	30	30	36	36	36	42
No. of strokes per minute..	30	30	30	30	25	25	25	22	22	22	22	22	22	22	22	20	20	17	17	17	15
Quantity in gallons per hour, approxmately ...	1440	2610	4200	5940	2940	4620	6600	2646	4158	5940	10620	2646	5160	7500	13260	4586	9000	12360	15660	6720	12000

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PATENT CONDENSERS

Can be supplied for any size pump to effect a saving of fully 30 per cent. in the consumption of fuel, greatly increasing their efficiency

The Blake Pump will work under water, and as efficiently with compressed air as with steam.

BLAKE'S DONKEY PUMPS FOR FEEDING BOILERS KEPT IN STOCK.

BARROWS & STEWART,

ENGINEERS, BANBURY,

MANUFACTURE

PORTABLE

Steam Engines

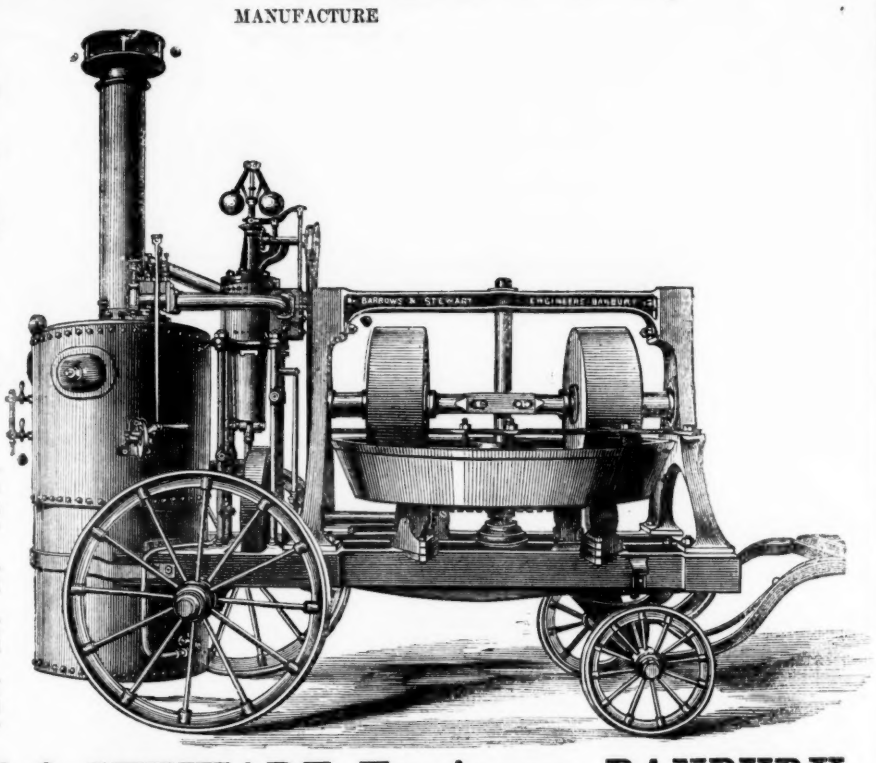
With Gear for Winding, Pumping, and Ore Crushing; also

Combined Mills and Engines,

WITH OR WITHOUT

BOILERS,

For Grinding Slag, Sand, Mortar, &c.



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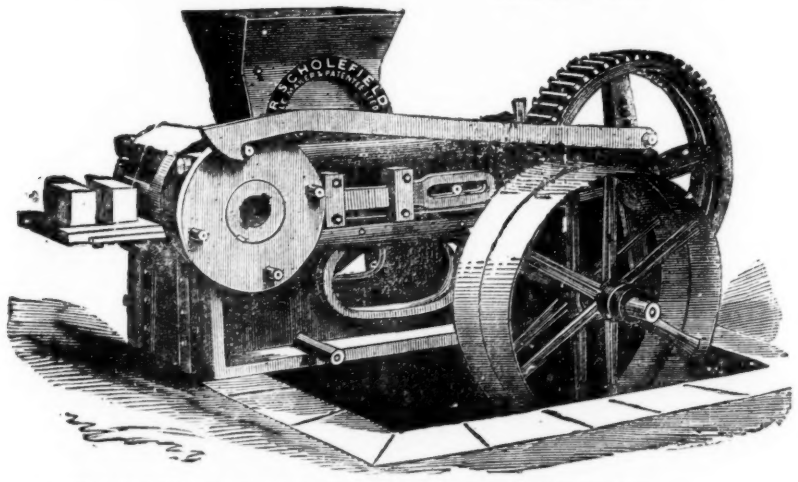

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Total cost of making 10,000 pressed bricks	£1 5 0, or 2s. 6d. per 1000.

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)

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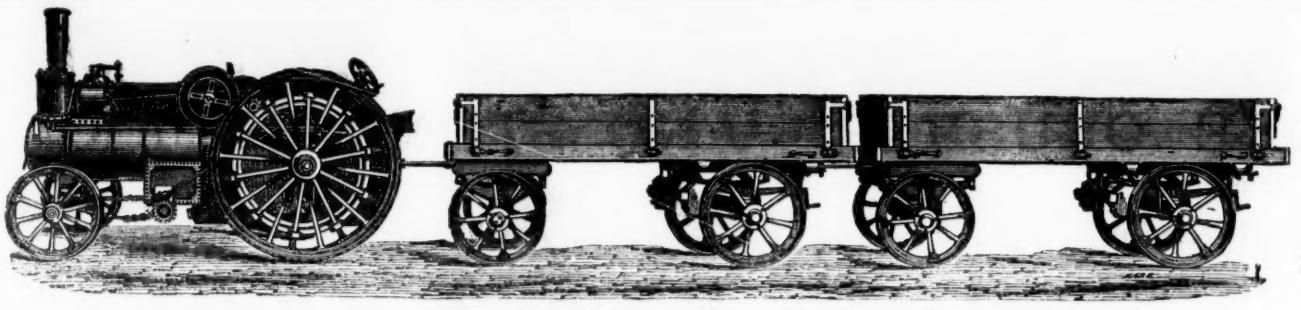

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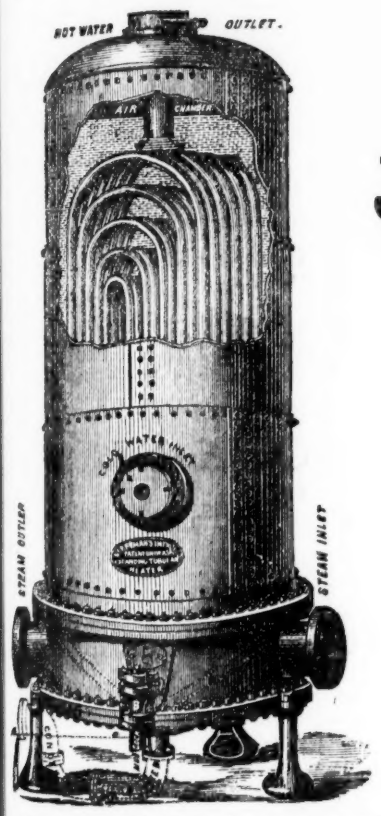

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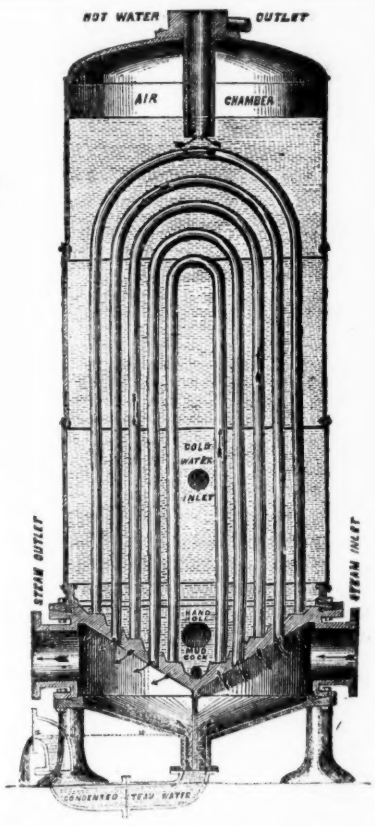

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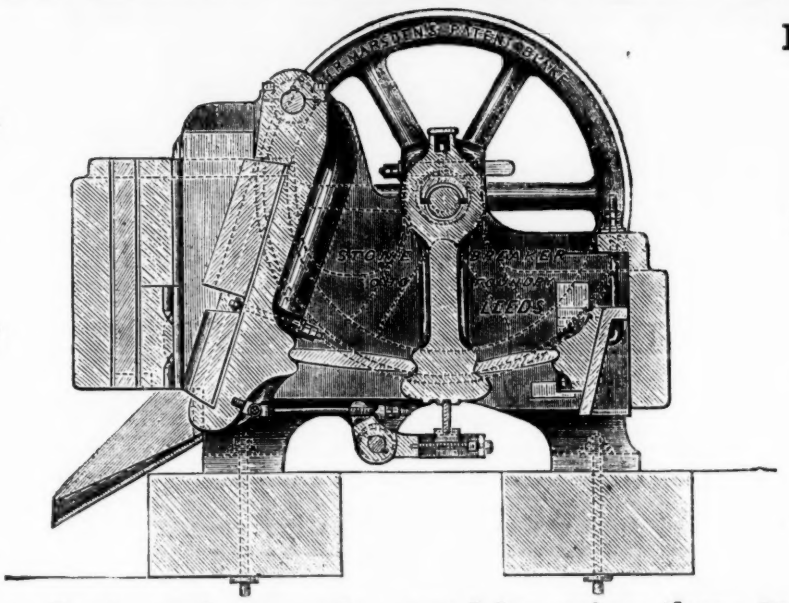

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